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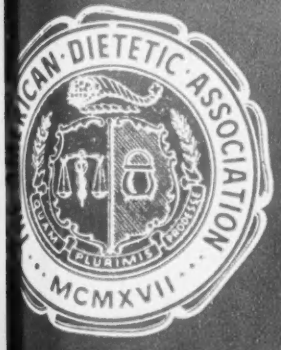

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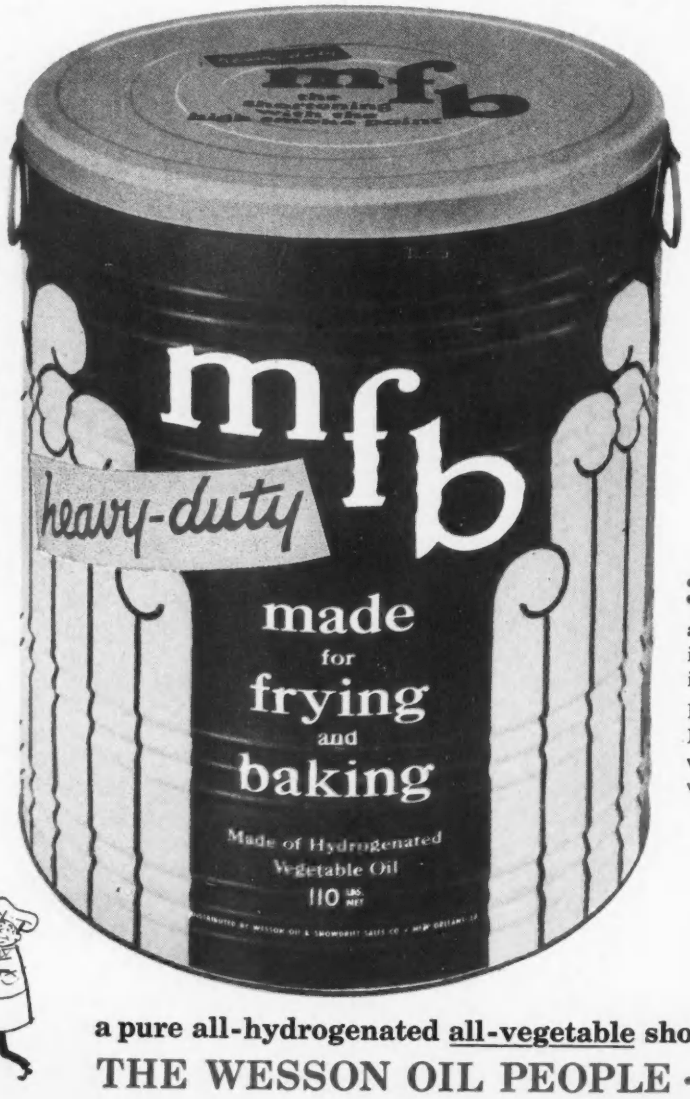

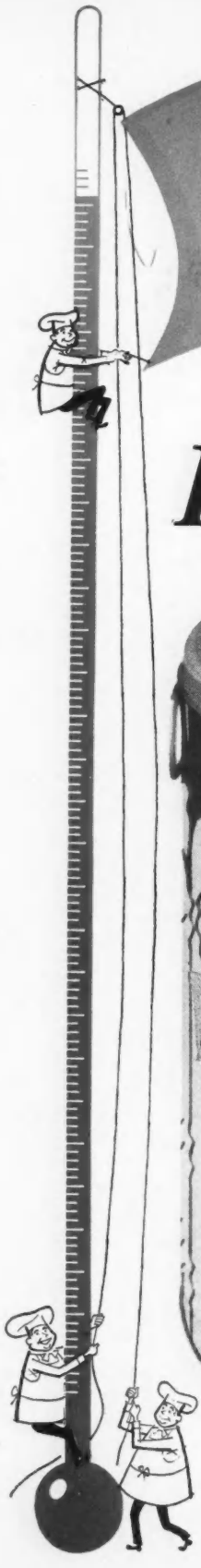

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Amino Acid Balance in Nutrition[1]

C. A. ELVEHJEM, Ph.D.

Professor of Biochemistry and Dean of the Graduate School, University of Wisconsin, Madison

LAST June, I had the privilege of attending a conference on "Protein Requirements and Their Fulfillment in Practice" sponsored by the Food and Agriculture Organization of the United Nations, the World Health Organization, and the Josiah Macy Jr. Foundation. Workers from all parts of the world attended; the discussions clearly indicated the need of considering world problems when attempting to establish protein requirements.

Two things left a very significant impression on me. One was the very excellent report given by W. C. Rose on his studies dealing with the amino acid requirements of young men. Regardless of future developments in the field of protein nutrition, these studies will remain as a classic in nutritional history. Second, in spite of these very careful studies dealing with amino acids, during subsequent discussions, emphasis was placed on protein requirements rather than amino acid requirements. It was agreed that in order to have figures for all age groups, it was necessary to use protein requirements and to select a rather complete protein such as milk protein as a standard. This, of course, allowed the utilization of the studies on the very young infant when the only source of protein is milk. In attempts to relate these figures to other sources of protein, it was suggested that we might use a coefficient to relate one protein to another.

These approaches were significant to me since they clearly indicated that in practical nutrition, we still are not ready to shift from a consideration of proteins to a consideration of amino acids. This is true even though we now have extensive figures for the amino acid content of a large variety of human foods. This situation is not surprising since nutritionists and dietitians still need to feed proteins or protein-containing foods to satisfy all the amino acid requirements. Perhaps it is even a happy circumstance since, if too great emphasis were placed on amino acids, we might encounter numerous difficulties.

[1] Presented before the 38th Annual Meeting of The American Dietetic Association in St. Louis, on October 21, 1955.

Overly Generous Recommendations?

I also observed that whether we were considering the requirements for the amino acids or for protein, there was always a tendency to be generous in the figures to be accepted. This is an old, old observation, especially to those of us who have followed the deliberations of the Food and Nutrition Board which finally decided to designate Recommended Dietary Allowances rather than daily requirements.

I personally am not worried about minimum requirements or minimum intakes of essential nutrients as long as these intakes are adequate. Now you may immediately ask, how do you know when the intake is adequate? From my experience in animal studies, I have seen that there is usually a rather definite demarcation between adequate and inadequate intakes. For example, under carefully standardized conditions, rats fed a complete diet containing a given nutrient at a minimum level will show a significant decrease in growth when that nutrient is reduced by 10 per cent (1). However, an increase of 10 per cent may have little or no effect.

Furthermore, it was clearly evident in Dr. Rose's report that the minimum requirement of an amino acid for a given individual is very definite. An individual who was in nitrogen balance with 0.15 gm. tryptophan per day was also in balance with the same level if the experiment were repeated several months later. It is true that while most individuals were in equilibrium with 0.15 gm., one subject required 0.2 gm. and a third possibly required 0.25 gm. tryptophan. To establish a safe level, Dr. Rose takes (2) the higher figure of 0.25 and multiplies it by 2 to give 0.5 gm. tryptophan as a safe level of intake. This may be a very satisfactory procedure. I would like to suggest, however, that if 99 per cent of the population can be maintained in positive nitrogen balance with 0.2 gm. tryptophan, why not take care of the extra one individual in some other way than by having all of the ninety-nine take in 0.5 gm.

The same type of analysis can be made of the protein requirement for infants and growing children. Whether the protein requirement of the infant should be 2, 2.5, 3, or 3.5 gm. per kilogram must depend on the degree of safety we want. You may say, why worry about the generous intake since it can be met without difficulty? Well, we have already encountered considerable discussion regarding the protein

requirements of infants, since a figure of 3.5 gm. per kilogram cannot be met through the use of human milk. Intake with human milk is closer to 2.5 gm. per kilogram. This discrepancy has been explained on the basis that the protein in human milk is more efficient than that of cow's milk. Some question, however, has been raised about this difference, since several workers claim that the amino acids in cow's milk are as available as those in human milk (3).

When we come to adults, certainly in this country at the present time, there seems to be no difficulty in meeting even the most generous level of protein allowance. However, if we consider the entire world situation, we face quite a different problem. That is why I mentioned earlier the significance of considering these problems on a world basis. It is obvious that in many parts of the world the growing child has inadequate intake of protein since we see wide-spread development of kwashiorkor and recent studies by Brock and co-workers (4) in Cape Town, South Africa, have clearly indicated that significant responses can be obtained by using mixtures of amino acids. In other words, it is clear that this disease is due to amino acid deficiencies rather than to other factors, such as vitamins and minerals. Furthermore, the generous intake of protein in this country is made up largely of a mixture of proteins which produces a good amino acid balance. A good share of our protein is from animal sources, and the vegetable proteins come from a variety of plant products including cereals, legumes, and leafy vegetables. In other parts of the world the protein intake comes largely from vegetable products and, unfortunately in many areas, a single type of vegetable protein or very limited mixtures.

Amino Acid Imbalances

This brings me to my point of emphasis, namely, that a generous intake of good quality protein—protein which supplies a balance of amino acids—certainly can do no harm. It is true that some of the earlier literature indicates some kidney damage due to high intakes of protein, but I believe these studies were conducted before the diet was adequate in all other respects. Very preliminary results in our laboratory with rats indicate no serious damage to the kidney even if the protein intake approaches 90 per cent. However, quite the opposite is true when the protein is incomplete or supplies an imbalance of amino acids. In this case, as the level of protein is increased, the requirement for certain amino acids increases and the effect may be more deleterious than if this protein of poor biologic value were used at lower levels.

Our first appreciation of amino acid imbalance in nutrition grew out of our early studies on the relationship between tryptophan and niacin in preventing pellagra. After we had shown (5) that the addition of corn to low-protein diets increased the requirement for niacin, we also observed that similar deficiencies could be produced in rats by adding tryptophan-free proteins or acid hydrolysates of proteins in which the tryptophan had been destroyed to the basal ration containing 9 per cent of casein and no niacin. Further studies showed that two amino acids—threonine and phenylalanine—seemed to be especially active in increasing the tryptophan requirement.

When we autopsied our animals, we found that the rats that had received the low-casein diets deficient in niacin and tryptophan showed some accumulation of fat in the liver. This occurred even though the diets contained an adequate amount of choline. The addition of either niacin or tryptophan improved the rate of growth but had no beneficial effect on the fatty livers. In fact, the amount of fat actually increased rather than decreased. The fat content of livers of weanling rats is about 8 to 10 per cent on the dry weight basis. After the animals had been on a diet containing niacin and tryptophan for two weeks, the level of fat increased to 25 to 30 per cent. Since we had used gelatin as one of the proteins to produce the increase in the tryptophan requirement, naturally we tried gelatin in these experiments. Much to our surprise, the inclusion of gelatin reduced liver fat, and when 6 per cent of gelatin was added, the level was reduced to normal. Although we suspected that proline might be the active amino acid since gelatin is so rich in this amino acid, we finally found that threonine was the most active.

Threonine Relationships

Thus we have two interesting relationships, namely, an excess of threonine will increase the tryptophan requirement, and an increase of certain other amino acids will increase the amount of threonine needed in order to have normal development of the liver. A few typical results are given in Table 1 (6). Singal and associates (7) used diets containing crystalline amino acids as the sole source of nitrogen and showed that the amount of fat accumulating in the liver varied with the amount of threonine in the diet.

TABLE 1

Influence of amino acids on growth and deposition of fat in livers of rats fed 9% casein containing adequate choline (4-week feeding period)

DIET	GROWTH	LIVER FAT (DRY WEIGHT)
	gm./wk.	%
9% casein-sucrose basal	17.7	30.1
Basal + 0.1% tryptophan	20.9	31.4
Basal + 6% gelatin	13.3	10.3
Basal + 0.56% L-arginine	13.8	26.2
Basal + 0.92% L-proline	15.8	28.0
Basal + 0.18% threonine	9.7	12.4
Basal + 1.5% glycine	16.4	18.3
Basal + 0.18% threonine + 6% gelatin	14.5	10.1
Basal + 0.1% tryptophan + 6% gelatin	25.9	20.9

We also found (8) that when the low-protein diets contained proteins other than casein, the beneficial effect of threonine varied. For example, when blood fibrin was used, little fat was deposited in the liver and the amount of threonine supplied by the fibrin was about equal to that supplied by casein. Other amino acids were undoubtedly having an effect.

The delicate balance of amino acids involved is evident from the fact that the addition of only 0.1 per cent methionine to the 9 per cent casein diet which was not supplemented with cystine increased the fat content of the liver from approximately 15 to 25 per cent (9). This effect is especially interesting, since methionine has long been recognized as a lipotropic factor. The effect must be separate and distinct from the effect of choline and the sparing effect of methionine on choline. These results are not limited to weanling rats, since a similar accumulation of liver fat is obtained with adult animals when the level of casein is reduced to 5 per cent (10).

Amino Acid Antagonists

As we continued our studies, we found that adding leucine to a 9 per cent casein diet produced a profound decrease in growth. If 3 per cent of leucine were added to the 9 per cent casein diet, rats actually lost weight, while if it were added to an 18 per cent casein diet no deleterious effect occurred. In other words, the extra 9 per cent of casein supplied amino acids which would prevent this effect. We soon found (11) that isoleucine was most effective in counteracting the high levels of leucine, and we have perhaps here the first true amino acid antagonism demonstrated in animals (Table 2). Although the isoleucine was very effective, it did not completely counteract the growth retardation, but the addition of both isoleucine and valine was very effective. Further studies have shown interesting relationships between leucine, isoleucine, valine, and phenylalanine. These studies were conducted using a good quality protein such as casein but at a low level.

Cereal Proteins

Let me now turn to a few studies involving cereal proteins. When we use rice as the sole source of protein, that is, about 90 per cent rice which supplies a level of protein of approximately 6 per cent, the growth of rats is poor. This has been observed by many workers, such as Pecora and Hundley (12) at the National Institutes of Health and Sure at Arkansas (13). If lysine is added alone, no improvement in growth results. However, if we add both lysine and threonine, a very significant growth response is observed but the level of fat in the liver is not reduced (Table 3). If we double the level of lysine and threonine, we are then able to prevent the accumulation of fat in the liver, but now we obtain a definite decrease in growth (14). This decrease in growth can be largely counteracted by valine and perhaps by histidine and tryptophan.

If we turn to corn, we find that the corn protein, zein, is very rich in leucine, actually 23 per cent of the protein, and if we are to obtain good growth on corn proteins, we must not only supplement the diet with the amino acids which are low but we need to add an excess of isoleucine to counteract the high intake of leucine (15). We seem to have another difficulty in the case of corn protein, since the ratio of leucine to isoleucine is not only abnormally high but much of the isoleucine is unavailable. We have then another problem which needs study, that of the unavailability of the amino acids especially in cereal proteins. It is significant that analytical data show the order of deficiency of amino acids in rice to be: lysine, histidine, methionine, tryptophan, threonine, phenylalanine, valine, leucine, isoleucine, and arginine; whereas growth studies indicate the following order: lysine, threonine, leucine, isoleucine, histidine, valine, tryptophan, methionine, phenylalanine, and arginine. This difference must be due to variations in the availability of certain of these amino acids.

We have recently observed another interesting situation regarding availability of amino acids, in this case, in casein. For many years, difficulties have been encountered in attempts to grow guinea pigs on purified diets. We finally found (16) that by adding gum arabic and extra amounts of magnesium and potassium, guinea pigs would grow on the usual syn-

TABLE 2

Antagonism between leucine and isoleucine with basal diet containing 9% casein (2-week feeding period)

ADDITIONS TO BASAL DIET		TOTAL WEIGHT GAIN
L-leucine	DL-isoleucine	
		gm.
—	—	33
1.5	—	9.5
1.5	0.4	27
3.0	—	2
3.0	0.8	23

TABLE 3

Effect of amino acid supplements on growth and liver fat in rats fed rice diets

DIET	GROWTH	LIVER FAT (DRY WEIGHT)
	gm./wk.	%
87% rice	8.9	29.1
87% rice + 0.2% L-lysine + 0.2% DL-threonine	22.0	28.9
87% rice + 0.4% L-lysine + 0.5% DL-threonine	16.7	13.8
87% rice + 0.2% L-lysine + 0.5% DL-threonine	23.3	22.0
87% rice + 0.4% L-lysine + 0.24% DL-threonine	18.9	10.5
87% rice + 0.2% L-lysine + 0.24% DL-threonine (+8 essential amino acids)	25.5	27.8
87% rice + 0.4% L-lysine + 0.5% DL-threonine (+ 8 essential amino acids)	30.6	14.9

thetic diet provided the level of casein in the diet was 30 per cent. On the other hand, naturally occurring products combined in the diet for guinea pigs would allow normal growth when the protein level was 18 per cent. We recently found that the addition of arginine will produce a tremendous growth response in guinea pigs fed 20 per cent of casein. In other words, in this case, the guinea pig not only has a high requirement for arginine but apparently cannot utilize all of the arginine present in casein. This observation emphasizes the importance of variations between species, and it is possible that human beings may differ in their ability to utilize amino acids from different proteins.

Conclusions

We are, therefore, in the midst of a new era in studying amino acids in nutrition, and it may be some time before we can make generalizations which will be helpful to you as dietitians. However, I would like to conclude by re-emphasizing the practical aspects of our observations. There is no need for excess protein in the diet provided we are certain that we supply adequate amounts of each individual amino acid and that the foods supplying these amino acids are in such form that amino acids are readily available. There is no harm in using excess protein in the diet if the protein is balanced.

If we use incomplete proteins, excess of protein may be more deleterious than beneficial. To overcome inadequacies of certain cereal proteins, a combination of proteins may be very helpful. In all of our work we have found animal proteins to be very effective in supplementing the vegetable proteins, but I believe further work will clearly indicate that many legume proteins are equally as valuable. In many parts of the world we must rely on these proteins rather than on increasing the level of animal proteins.

Finally, we should return to our original discussion of requirements and emphasize that in contrast to the rather wide ranges tolerated in the case of other nutrients, the toxic levels of many amino acids range from two to ten times the requirements. Fortunately from a practical point of view, the amino acids supplied by most good quality proteins and most diets used, at least in this country, fall within these ranges.

REFERENCES

(1) Sarma, P. S., Snell, E. E., and Elvehjem, C. A.: The vitamin B_6 group. 8. Biological assay of pyridoxal, pyridoxamine, and pyridoxine. J. Biol. Chem. 165: 55, 1946.

(2) Rose, W. C., Lambert, G. F., and Coon, M. J.: The amino acid requirements of man. 7. General procedures: the tryptophan requirement. J. Biol. Chem. 211: 815, 1954.

(3) Food and Nutrition Board: Recommended Dietary Allowances, Revised 1953. Natl. Acad. Sci.–Natl. Research Council Pub. 302, 1953, p. 9.

(4) Brock, J. F., Hansen, J. D. L., Howe, E. E., Pretorius, P. J., Davel, J. G. A., and Hendrick, R. G.: Kwashiorkor and protein malnutrition. A dietary therapeutic trial. Lancet 269: 355, 1955.

(5) Elvehjem, C. A.: Tryptophan and niacin relations and their implications to human nutrition. J. Am. Dietet. A. 24: 653, 1948.

(6) Harper, A. E., Monson, W. J., Benton, D. A., and Elvehjem, C. A.: The influence of protein and certain amino acids, particularly threonine, on the disposition of fat in the liver of the rat. J. Nutrition 50: 383, 1953.

(7) Singal, S. A., Hazan, S. J., Sydenstricker, V. P., and Littlejohn, J. M.: The lipotropic action of threonine and related substances in the rat. J. Biol. Chem. 200: 883, 1953.

(8) Winje, M. E., Harper, A. E., Benton, D. A., Boldt, R. E., and Elvehjem, C. A.: Effect of dietary amino acid balance on fat disposition in the livers of rats fed low protein diets. J. Nutrition 54: 155, 1954.

(9) Harper, A. E., Benton, D. A., Winje, M. E., and Elvehjem, C. A.: "Antilipotropic" effect of methionine in rats fed threonine-deficient diets containing choline. J. Biol. Chem. 209: 159, 1954.

(10) Harper, A. E., Benton, D. A., Winje, M. E., Monson, W. J., and Elvehjem, C. A.: Effect of threonine on fat disposition in the livers of mature rats. J. Biol. Chem. 209: 165, 1954.

(11) Harper, A. E., Benton, D. A., and Elvehjem, C. A.: L-leucine, an isoleucine antagonist in the rat. Arch. Biochem. 57: 1, 1955.

(12) Pecora, L. J., and Hundley, J. M.: Nutritional improvement of white polished rice by the addition of lysine and threonine. J. Nutrition 44: 101, 1951.

(13) Sure, B.: Relative nutritive value of proteins in whole wheat and whole rye and effect of amino acid supplements. J. Agric. & Food Chem. 2: 1108, 1954.

(14) Harper, A. E., Winje, M. E., Benton, D. A., and Elvehjem, C. A.: Effect of amino acid supplements in growth and fat disposition in the livers of rats fed polished rice. J. Nutrition 56: 187, 1955.

(15) Benton, D. A., Harper, A. E., and Elvehjem, C. A.: Effect of isoleucine supplementation on the growth of rats fed zein or corn diets. Arch. Biochem. 57: 13, 1955.

(16) Heinicke, H. R., Harper, A. E., and Elvehjem, C. A.: Protein and amino acid requirements of the guinea pig. 1. Effect of carbohydrate, protein level, and amino acid supplementation. J. Nutrition, in press.

Effects of A-Blast on Canned Foods

Analyses by the Wisconsin Alumni Research Foundation of canned foods exposed to atomic blast last spring during tests in Nevada indicate that niacin and riboflavin were completely unaffected in many of the products and sustained only minor losses in others. In canned vegetables and fruits, there was no loss of carotene. Nearly all of the products retained more than 80 per cent of their thiamine and over 90 per cent of their ascorbic acid. This work was recently reported to the Wisconsin Canners Association by George B. Morrill, Jr., President, National Canners Association.

Research in Atherosclerosis[1]

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THESE remarks will be confined to a few recent researches from our laboratory that bear on the subject of atherosclerosis. By mentioning work only from our department, I do not mean to imply that others are not working hard on this important problem. They are, and reports are being made almost every month from various laboratories. Also, I would like to point out what should be obvious, namely that the work I shall mention has not been done by me personally, but by many hard-working colleagues and students.

Concerning atherosclerosis and its causes, one can speak of basic factors and environmental factors. Under the former are such things as race, age, sex, body type, personality, and aberrations in body chemistry, by which I mean such changes as those found in diabetes and some of the xanthomatoses. We can't do much about these factors. Environmental factors include stress and strain, tobacco, alcohol, social customs, exercise, and *diet. Diet* is mentioned last, and in italics because it is probably of more importance than the other environmental factors and because something *can* be done about it —if we want to and if we know what to do.

Here are a few specific statements which may be of interest:

Experimental Atherosclerosis

(a). The level of certain blood fats, particularly those associated with cholesterol, bears an important relationship to the *experimental production* of atherosclerosis. This disease of the blood vessels has been produced experimentally in at least five species—rabbit, chick, dog, monkey, and rat—but only after some procedure has been devised to raise appreciably the serum (blood) cholesterol.

The techniques usually used to elevate the serum cholesterol experimentally are to add substantial quantities of cholesterol directly to the diet, add large quantities of egg yolk, slow down body metabolism by means of a drug that inhibits the thyroid gland, increase the amount of dietary fat, use a protein source low in sulphur, or various combinations of all of these factors.

Serum Cholesterol in Man

It is well known that atherosclerosis in man frequently is present in individuals who do not have what is generally considered an elevated serum cholesterol, for example, a level of the order of 250 mg. per 100 ml. blood serum. But, what is usually not known is the level of cholesterol in this person's blood serum ten years ago. Perhaps it was only 125 mg.; thus in actuality there may have been a 100 per cent elevation!

(b). Rapid gain in weight in man may result in a rapid and marked elevation of the serum cholesterol level. This was shown in our laboratory to take place even when the diet which resulted in the weight gain was extremely low in fat and cholesterol (1).

(c). Loss of weight in man tends to reduce serum cholesterol if it is at a level that is generally considered elevated—again an observation made in our laboratory (1).

(d). More recently our laboratory has shown in man that if exercise is vigorous enough to prevent gain in weight even following the daily consumption of 6000 calories of a diet rich in fat—approximately 175 gm. a day—there is no increase in serum cholesterol (Table 1). When the vigorous exercise was stopped, cholesterol levels of the serum promptly increased as did body weight. In other words, regardless of caloric and fat intake, if excess calories are burned up in exercise, they are gone, and are not available for other body activities (2).

(e). Studies we have done in cooperation with Scrimshaw of the Institute of Nutrition of Central America and Panama (3) and Nichols in Nigeria (4) have shown quite clearly that groups of people consuming throughout their lifetime diets low in fat (8 to 15 per cent of calories from fats) have markedly lower serum cholesterol levels (Table 2). Strangely, the beta-lipoproteins were not much different when compared with urban males from this country consuming diets in which 40 per cent or more of the calories were provided by fat.

[1] Presented at the 38th Annual Meeting of The American Dietetic Association in St. Louis, on October 21, 1955.

TABLE 1

Relation of caloric intake and exercise to serum cholesterol and serum beta-lipoproteins

PERIOD	REGIMEN	CALORIC INTAKE	BODY WEIGHT	SERUM CHOLESTEROL	S_f 12—100 LIPOPROTEINS
			lb.	*mg./100 ml.*	*mg./100 ml.*
1	no exercise	3000	196	155	150
2	exercise	6200	200	165	150
3	no exercise	5400	214	275	225
4	no exercise	2300	206	200	175

American Dietary Pattern

(f) Lastly, has there been a marked change in the American diet during the past generation? What are the principal changes? Data on food consumption to estimate changes are generally acquired by two methods: the official tables of food availability prepared by the Department of Agriculture and survey data of families or particular groups. The first method, of food availability also called food consumption data, is an estimate of foodstuffs available for civilian consumption based on foods at the retail level. Such data have not been adjusted for waste in homes or in institutions. Data on waste are not usually very reliable; however, quantity of waste may be very important. For example, how much fat is discarded after the cooking of meats, bacon, or fat frying? Have the cooking methods changed in this country so that more food is broiled and excess fat wasted?

From the data of the Department of Agriculture, it is found that from 1935 to 1955 the average caloric consumption per capita per day has decreased very little, roughly 70 calories. Protein use has increased from 90 to 97 gm., fat from 134 to 148 gm., while carbohydrates have decreased from 440 to 384 gm. per day. The decreased use of potatoes and cereals and an increase in milk, meat, and eggs seems to have been responsible for these changes in the food availability tables. Since consumption of cereals and potatoes has decreased, as well as total calories, the *percentage* of fat in the diet would show an increase, even if the total fat consumed had not changed appreciably. Since, in periods of prosperity, waste may be greater than in periods of austerity, food availability tables may not present a true picture of changes in the dietary.

The second method, the dietary survey, may or may not consider food waste. Many studies ranging from approximately 1900 to the present day show a considerable variation in dietary intake depending on the group under scrutiny.

For example, some early investigators found the percentage of calories from fat in the diet ranged from 35 to 48, depending on the population investigated. Thus, the Harvard Crew of 1898 consumed a diet providing 39 per cent of the calories from fat. A survey of women eating at college clubs in 1894

TABLE 2

Guatemalan, Nigerian, and U. S. urban diets in relation to serum cholesterol and serum beta-lipoproteins

SUBJECTS	CALORIC INTAKE	PROTEIN INTAKE			FAT INTAKE				SERUM CHOLESTEROL	S_f 12—20 LIPOPROTEINS
		Animal	Vegetable	Total	Animal	Vegetable	Total	Proportion of total caloric intake		
		gm.	*gm.*	*gm.*	*gm.*	*gm.*	*gm.*	*%*	*mg./100 ml.*	*mg./100 ml.*
Guatemala										
Rural	2300	—	—	—	13	8	21	8	150	27
Nigeria										
Tribe A	2800	3	90	93	—	—	26	8	120	21
Tribe B	2400	20	26	46	—	—	45	15	130	30
Tribe C	2500	6	70	76	—	—	45	15	120	22
Urban	—	—	—	—	—	—	—	—	213	33
United States										
Urban males	3300	—	—	100	—	—	140	40	233	35

showed that 36 per cent of the calories came from fat. A study done by this department in 1953 of adult women indicated that the percentage of calories derived from fat ranged from 36 to 46 of the total. Two large surveys from the Department of Agriculture suggested that the individual surveys followed the trends of the food availability tables, showing that the contribution of fat calories has increased from 36 to 43 per cent in the last twenty years. Sub-groups, however, would show variations around these means.

It is, of course, true that the use of hydrogenated fats has increased. Twenty years ago these fats were relatively new products. However, the proportion of animal and vegetable fats in the diet has remained relatively constant. Again quoting Department of Agriculture tables, from 1935–39, of 132 gm. fat available for human consumption, 73 per cent were from animal sources and 27 per cent were vegetable fats. In the 1955 preliminary report, 148 gm. fat were available, 70 per cent of animal and 30 per cent of vegetable origin.

In addition to the surveys and food availability tables, careful studies on actual intakes, including waste, food preparation, and types of fats and protein foods used in various socio-economic groups in this country should be undertaken so that "changes in the American dietary" might be clarified.

Summary

Nutrition—protein, fat, type of fat, and undoubtedly other nutrients—does unquestionably play a role in the causation of atherosclerosis, but it will take many years, much work, and much money to work out these relationships.

REFERENCES

(1) WALKER, W. J., LAWRY, E. Y., LOVE, D. E., MANN, G. V., LEVINE, S. A., AND STARE, F. J.: Effect of weight reduction and caloric balance on serum lipoprotein and cholesterol levels. Am. J. Med. 14: 654, 1953.

(2) MANN, G. V., TEEL, K., HAYES, O., MCNALLY, A., AND BRUNO, D.: Exercise in the disposition of dietary calories: Regulation of serum lipoprotein and cholesterol levels in human subjects. New England J. Med. 253: 349 (Sept. 1), 1955.

(3) MANN, G. V., MUNOZ, J. A., AND SCRIMSHAW, N. S.: The serum lipoprotein and cholesterol concentrations of Central and North Americans with different dietary habits. Am. J. Med. 19: 25, 1955.

(4) MANN, G. V., NICOL, B. M., AND STARE, F. J.: The beta-lipoprotein and cholesterol concentrations in sera of Nigerians. Brit. Med. J. 2: 1008, 1955.

BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Joseph Black—April 16, 1728–November 10, 1799

Oxidation is the source of energy for the life process. One of the end products of oxidation within the human body is carbon dioxide. This is a waste product or end product of metabolism which the body must continuously eliminate by exhalation or in soluble salts by way of the kidney. That is a familiar and elementary story but, until the work of Lavoisier (1743–1794), the father of nutrition and the one who laid the foundations for modern chemistry, it was impossible to understand the chemistry of the body processes. Lavoisier was the great interpreter, but the foundation stones for his work were prepared by Cavendish (1731–1810), Priestley (1733–1804), and Black. Joseph Black was the discoverer of what we now call carbon dioxide, but which he named "fixed air" to distinguish it from ordinary air.

Black's discovery was presented as his thesis for the M.D. degree at the University of Edinburgh. He was trying to find a milder alkali than those then in medical use (caustic potash or caustic soda) for dissolving "the stone." He heated chalk and found that it lost weight; when unheated chalk was treated with acid, it effervesced, the gas it produced being what Black called "fixed air." Black's work, according to one of his biographers, had more fundamental influence on the progress of chemistry than any experiments up to that time. His was the first intensive study of a chemical reaction. He used the balance (a home-made one for much of his work) and made accurate and quantitative measurements, showing for the first time, that there was a gas distinct from air, that it existed free or combined, and that it could be transferred from combination with one substance to another.

He was also famous for his work on heat; he distinguished between quantity of heat and intensity of heat or temperature. He showed that each substance had a characteristic capacity for heat (1760) which we now call "specific heat"; also that a definite quantity of heat disappears in the changes in physical state, such as in melting of ice and evaporation of water. This he called "latent heat" (1762). It was this theory of latent heat which later led his pupil James Watt to invent the steam engine.

Joseph Black was born in Bordeaux, France on April 16, 1728, one of thirteen children. His father was a wine merchant from Ireland, but of Scottish extraction. At the age of twelve, Joseph went to Belfast to live with relatives and spent four years in a private school. Then in 1746 he went to the University of Glasgow to study medicine. In those days, medicine was the only pathway to learning science. It is of interest and contrast to today's higher education that at Glasgow, lectures began at 7 A.M. and the doors were closed at 4 min. past the hour. Black was a hard working student, and his zeal and interest attracted the attention of the great William Cullen (1716–1790), who made him his assistant in chemistry.

In 1751, Black went to the University of Edinburgh to finish his medical education (Glasgow did not then give the M.D. degree) and prepared his dissertation (published in 1756), "Experiments upon Magnesia Alba, Quicklime, and Some Other Alcaline Substances" which made him famous throughout the world of science as the discoverer of carbon dioxide. Black engaged in medical practice in Edinburgh (1754–56), then went to Glasgow as Professor of Anatomy and Chemistry, and in 1766 to Edinburgh as Professor of Chemistry. Benjamin Rush was one of his students in 1768. He always carried on a small medical practice and also did some consulting work for inventors and business men.

Black never married, but lived a rather quiet life among his many friends and conserved his strength because of his frail health. He was a modest, gentle, and sincere man, of very methodical habits and an inventive mind.

REFERENCES: Ramsey, Sir W.: The Life and Letters of Joseph Black, M.D. London: Constable & Co., 1918; Mackenzie, J. E.: The chair of chemistry in the University of Edinburgh in the 18th and 19th centuries. J. Chem. Educ. 12: 503, 1935; Dobbin, L.: Joseph Black's inaugural dissertation. I and II. J. Chem. Educ. 12: 225, 268, 1935; Dobbin, L.: Daniel Rutherford's inaugural dissertation. J. Chem. Educ. 12: 370, 1935.—*Contributed by E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa.*

Experimental Niacin Deficiency[1]

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HUMAN niacin requirement and the role of corn diets in the pathogenesis of pellagra have been subjects of investigation in our laboratory for a number of years. Early studies demonstrated that the amino acid tryptophan was converted to niacin compounds in man, as in many animal species (1–3). Since tryptophan is a precursor of niacin, it is necessary to control the tryptophan as well as the niacin intake in investigating niacin deficiency and requirement. Diets were formulated which were low in niacin and tryptophan and contained either corn or wheat as the principal cereal. These diets have been used in sixteen long-term metabolic experiments with twelve adult human subjects, two men and ten women. Results of most of these experiments have been reported previously in detail (4–6). Severe niacin deficiency was induced in nine of the experiments, mild deficiency in four. Essentially all of the characteristic manifestations of pellagra have been observed in the course of this investigation, although not all were present in each subject. These findings lead to the conclusion that pellagra is due to deficiency of niacin, and its precursor tryptophan, and is not a syndrome of multiple deficiency.

The experimental "corn" diet which was used in these studies is shown in Table 1. The exact quantities of foods prescribed varied slightly from one experiment to the other. The "wheat" diet was similar, except that 50 gm. potato were included, farina was substituted for corn grits, and biscuits were used in place of corn bread. The diets were supplemented with B vitamins other than niacin in amounts believed to be considerably above minimal requirements (4).

The symptoms and signs of niacin deficiency which developed in subjects receiving the experimental diets are shown in Table 2. Dermatitis, glossitis, stomatitis, diarrhea, proctitis, and mental depression—findings which represent classical features of pellagra—were noted frequently. Heartburn, abdominal pain, vaginitis, dysphagia, and amenorrhea were also observed. These changes, too, are common in endemic pellagra. The development of fissures at the angles of the mouth, cheilosis, and naso-labial seborrhea was unexpected in uncomplicated niacin deficiency. These lesions were described first in experimental riboflavin deficiency. They have been observed, also, in deficiency resulting from administration of desoxypyridoxine (7).

The urinary excretion of the two chief metabolites of niacin, N^1-methylnicotinamide and its 6-pyridone, decreased rapidly during the experimental regimens, reaching minimal levels after thirty to sixty days and remaining essentially constant thereafter. In most instances, the first clinical evidence of deficiency was noted within a short period of time after excretion became stabilized at a low level. In patients who developed severe deficiency, excretion of N^1-Me always decreased to less than 0.8 mg. daily, excretion of pyridone fell to 1 mg. or less, and the combined excretion of these two metabolites was less than 1.5 mg. in a 24-hr. period. In subjects with mild deficiency, slightly larger quantities of niacin metabolites were excreted in the urine. Tryptophan excretion averaged 5 to 6 mg. daily in most subjects, and excretion of quinolinic acid, a metabolic derivative of tryptophan, was approximately 3 to 4 mg. throughout the experimental periods.

Differences were observed between the wheat and corn diets in the incidence of induced niacin deficiency, its severity, and the rapidity with which deficiency developed. Of ten subjects who received basal "corn" diets, seven developed severe deficiency and three showed mild evidence of niacin deprivation. Of five subjects who received "wheat"

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[2] The author wishes to express her appreciation to the many members of the staff of the Division of Nutrition and Metabolism who collaborated in these studies, especially to Janis Gibbens and Drs. H. P. Sarett, W. G. Unglaub, and O. Neal Miller.

The vitamin and tryptophan supplements used in these investigations were generously supplied by the Medical Research Department, Winthrop-Stearns, Inc., through the courtesy of Kenneth Smoot.

TABLE 1

Typical experimental "corn" diet

FOOD	WEIGHT
Breakfast	
	gm.
Orange or grapefruit juice	200
Corn grits (dry wt.)	45
White bread	30
Margarine	10
Sugar	10
Noon Meal	
Wilson's chopped beef	20
Rice (dry wt.)	33
Green beans*	100†
or	
Mustard greens*	50†
Corn bread	75
Margarine	10
Fruit cocktail*	100†
or	
Apple sauce*	150
Apple juice	200
Evening Meal	
Beets*	100†
or	
Carrots*	100†
Margarine	10
Corn bread	75
Grape juice	100
Sugar	30
Gelatin	20
Pears*	100†
or	
Pineapple*	100†
Between-Meal Snacks	
3.00 P.M.	
Lemon juice	20
Sugar	20
8.00 P.M.	
Prune juice	100
or	
Apple juice	100

* Given on alternate days.
† Canned drained weight.

diets, severe deficiency was noted in two, mild deficiency in one, and no definite evidence of deficiency in the remaining two. Signs of deficiency were not observed in one subject who received the "corn" diet supplemented with 2 mg. niacinamide. Deficiency developed more slowly during the "wheat" than during the "corn" regimen.

Effects of Different Types of Corn

Several types of corn were used in the experimental diets. Unenriched, degerminated corn which was milled in the United States was incorporated in the diet in five experiments, ground whole corn which was grown in Guatemala was used in two studies,

TABLE 2

Incidence of signs of niacin deficiency in 16 subjects who received basal "corn" or "wheat" diets low in niacin and tryptophan

SIGNS	NUMBER OF SUBJECTS
Dermatitis	12
Elbow	10
Perirectal	7
Face	3
Vulva	3
Hands	2
Nasolabial folds	2
Legs	1
Palms and soles	1
Glossitis	12
Atrophic papillae	11
Redness	9
Fissures	4
Swelling	1
Stomatitis	8
Heartburn	7
Diarrhea	6
With bleeding	2
Abdominal pain	6
Proctitis	5
Mental depression	5
Angular fissures	5
Vaginitis	4
Cheilosis	3
Dysphagia	3
Amenorrhea or hypomenorrhea	3
Nausea and vomiting	3
Indigestion	2
Anorexia	2
Weakness	2
Apathy	2
Weight loss	2
Herpes of lip	2
Enlarged parotid glands	1
Conjunctival injection	1
Palpitation	1
Lethargy	1
Pain and numbness of soles and feet	1

and whole Guatemalan corn which had been treated with lime was given in the remaining three. The treatment of corn with lime (the process used in the preparation of tortillas) was carried out in Guatemala, through the cooperation of Dr. Nevin S. Scrimshaw and his associates at the Institute of Nutrition of Central America and Panama. The effect of treating corn with lime was investigated, since it had been shown that treatment of corn with alkali appeared to protect animals from the growth depression usually observed with high-corn diets. It has been postulated that alkaline treatment releases "bound" niacin from corn.

In our studies, pellagra appeared more rapidly in subjects who received Guatemalan whole corn, either untreated or lime-treated, than in those who received degerminated corn obtained in the United States. Treatment of corn with lime, prior to incorporation

in the diet, did not influence the development of niacin deficiency under the conditions of our experiments. However, corn products furnished only 15 to 20 per cent of the total caloric intake. In Central America, where corn is treated with lime prior to use in the diet, 80 per cent of the daily supply of calories is derived from corn. It is of interest to note that pellagra is rare in this area. If larger amounts of corn had been used in our experimental diets, it is conceivable that treatment with lime might have been found to have some pellagra-preventive effect. If such an effect should be demonstrated, it might be due to release of "bound" niacin from corn thereby making more of this vitamin available to the subject. This seems unlikely, as processing with lime results in a loss of niacin amounting to 10 to 20 per cent (6). If treatment of corn with lime assists in preventing niacin deficiency, the protective influence might be due to correction of amino acid imbalance of the diet. Processing with lime results in loss of amino acids, as well as of niacin. Amino acid imbalance has been found to lead to niacin deficiency in experiments in animals (8).

The earlier appearance of niacin deficiency with diets containing whole as compared with milled corn might be explained by the presence of some substance in the germ or bran layer of corn which acts as a "toxic" or inhibitory factor, thereby affecting the requirement or utilization of niacin.

Effects of Minor Differences in Quantity of Niacin

Other explanations for the variation in findings among the several diets used in our experiments include: differences in niacin requirement among the subjects who were studied, differences in subjects' body niacin stores prior to initiation of the experiments, or minor differences in the quantities of niacin and tryptophan supplied by the diets.

In evaluating the role of the last possibility, it was found that the total daily intake of niacin (and tryptophan) did not appear to explain the rapid development of severe deficiency in some subjects and the failure of deficiency to develop, or the slow appearance of minimal signs of deficiency, in others (Table 3). The rate at which severe deficiency progressed was greatest in Experiments *6* to *9* inclusive, less rapid in Experiments *1* and *4*, and slowest in Experiments *2*, *3*, and *5*, yet total niacin intake was larger in the subjects of Experiments *6* to *9* than in the other five subjects. In the subjects of Experiments *10* to *13* inclusive, only mild niacin deficiency was induced, yet the daily intake of niacin was essentially the same as that of subjects in Experiments *6* to *9* who developed severe deficiency.

Body Size and Niacin Requirement

The intake of niacin per kilogram of body weight, and to a lesser extent that of tryptophan, appears to be closely related to the development of niacin deficiency and its severity (Table 3). Eight of nine subjects who developed severe deficiency received less than 0.10 mg. niacin per kilogram of body weight, daily. Tryptophan intake was less than 3 mg. per kilogram in seven of these subjects. Of four subjects who developed mild niacin deficiency, two received less than 0.1 mg. niacin per kilogram of body weight and one less than 3 mg. tryptophan per kilogram. The three subjects who failed to develop definite evidence of deficiency received more than 0.10 mg. niacin and 3 mg. tryptophan per kilogram of body weight. Similar relationships were found between the development of niacin deficiency and the intake of niacin and tryptophan per square meter of body surface area.

Rose (9) did not find a relationship between body size and tryptophan requirement, but some subjects needed more of this amino acid than others. Differences in tryptophan requirement among the subjects of our studies might provide more tryptophan above minimal need in some subjects than in others. The excess tryptophan might be available for conversion to niacin compounds.

Possible Caloric Relationships

The energy value of the diets varied from 1600 to 2100 calories daily in the sixteen experiments. Since the subjects differed considerably in body weight, the caloric intake per kilogram ranged from 24 to 47 (Table 3). In general, subjects who received the greatest number of calories per kilogram of body weight developed deficiency at a slower rate than those who received fewer calories per kilogram. It is possible that the provision of energy from nonprotein sources may have spared some tryptophan for conversion to niacin. However, these findings may have been due to aspects of the diet unrelated to calories, or to biologic variation among the individual subjects.

Some relationship was observed between the development of niacin deficiency and the intake of niacin or tryptophan per 1000 calories of diet. Eight of nine subjects who developed severe deficiency received less than 3 mg. niacin per 1000 calories. However, two of three subjects who failed to develop deficiency and two of four who developed minimal evidence of deficiency received equally small amounts. All subjects who showed minimal or no signs of deficiency received more than 100 mg. tryptophan per 1000 calories. However, four subjects who developed deficiency received equally large amounts. Thus, in these experiments, niacin requirement seemed to be related both to body size and to the caloric value of the diet but the former relationship appeared to be more definite.

"Niacin Equivalent"

Horwitt (10) recently suggested that the niacin "equivalent" of the tryptophan supplied by the diet

TABLE 3

Niacin, tryptophan, and caloric intakes of subjects receiving experimental diets in relation to the development of niacin deficiency

EXPERIMENT NUMBER	SUBJECT	DIET	BODY WEIGHT	TOTAL INTAKE		INTAKE RELATED TO WEIGHT			INTAKE RELATED TO CALORIC INTAKE		"NIACIN EQUIVALENT"‡
				Niacin	Tryptophan	Niacin	Tryptophan	Energy	Niacin	Tryptophan	
				Severe Niacin Deficiency							
			kg.	*mg./day*	*mg./day*	*mg./kg./day*	*mg./kg./day*	*calories/kg./day*	*mg./1000 calories*	*mg./1000 calories*	
1	L. M. G.	U. S. corn	64.5	4.4	177	0.07	2.7	30	2.3	90	3.8
2	H. K.	U. S. corn	56.4	4.6	186	0.08	3.3	37	2.2	89	3.7
3	R. C.	U. S. corn	45.0	4.6	195	0.10	4.3	38	2.7	115	4.6
4	L. M. G.	Wheat	65.5	4.7	185	0.07	2.8	24	3.0	116	4.9
5	J. L.	Wheat	64.4	4.3	177	0.07	2.8	28	2.4	100	4.1
6	E. G.	U. G. corn*	65.7	4.8	170	0.07	2.6	27	2.7	97	4.4
7	E. G.	T. G. corn†	68.6	5.4	193	0.08	2.8	27	2.8	99	4.4
8	O. B.	U. G. corn*	71.4	5.1	197	0.07	2.8	27	2.7	103	4.4
9	O. B.	T. G. corn†	69.5	4.9	180	0.07	2.6	29	2.5	91	4.0
				Mild Niacin Deficiency							
10	E. F.	U. S. corn	47.7	5.2	183	0.11	3.8	38	2.9	102	4.6
11	L. W.	T. G. corn†	48.6	5.4	196	0.09	3.3	31	3.0	109	4.8
12	R. L.	Wheat	40.9	4.9	195	0.12	4.8	41	3.0	117	4.9
13	M. L.	U. S. corn	74.8	5.3	207	0.07	2.8	28	2.6	101	4.3
				No Definite Deficiency							
14	P. C.	Wheat	48.2	5.0	200	0.10	4.2	37	2.8	111	4.6
15	R. L.	Wheat	39.5	4.2	193	0.11	4.9	47	2.2	103	4.0
16	W. H.	U. S. corn + 2 mg. niacin	67.7	7.1	211	0.11	3.1	29	3.6	107	5.4

* Untreated Guatemalan corn.

† Treated Guatemalan corn.

‡ Niacin equivalent = niacin/1000 calories + $\frac{\text{tryptophan/1000 calories}}{60}$. See reference (10).

might be calculated by considering that 60 mg. tryptophan was equivalent to 1 mg. niacin. Using this ratio, he calculated the "niacin equivalent" per 1000 calories of diet from data reported in several studies of experimental pellagra. He found that pellagra developed when the "niacin equivalent" was 3.9 but not when it was 4.4 or 4.7. Calculation of the "niacin equivalents" of the diets used in our experiments fail to substantiate Horwitt's suggestion. In experiments in which severe deficiency developed, "niacin equivalents" varied from 3.7 to 4.9; in those in which mild deficiency was observed, "equivalents" ranged from 4.3 to 4.9; and in those resulting in no deficiency, "equivalents" were 4.0 to 5.4.

These results are not surprising. When tryptophan intake approximates minimal requirement, it seems likely that only small amounts will be available for conversion to niacin. Presumably, most of the tryptophan will be used for protein synthesis and other vital functions. In our studies, the diet furnished little tryptophan in excess of minimum requirement. The "niacin equivalent" of tryptophan *after* the minimum requirement of this amino acid is satisfied may be in the neighborhood of 1 mg. niacin for 60 mg. tryptophan, but more data are needed to establish this conversion ratio.

Adequate Niacin Intake

In other studies of niacin requirement in our laboratory, various amounts of niacinamide were added to corn diets, which furnished about 200 mg. tryptophan, in an attempt to estimate what might be considered an "adequate" niacin intake with this dietary regimen (5). The total niacin furnished by the diet plus supplements ranged from 4.6 to 21.2 mg. daily. When the intake of niacin reached 8 to 10 mg. daily, there was a significant increase in the proportion of the intake which was excreted as metabolites in the urine. The combined excretion of N^1-Me and pyridone was 0.2 mg. for each milligram of niacin ingested when the intake was less than 8 to 10 mg. daily, and 0.6 mg. for each milligram of niacin ingested when the intake was above this level. These data suggest that a dietary supply of 8 to 10 mg. niacin is adequate to prevent depletion of body stores when a corn diet which furnishes 200 mg. niacin is administered. With diets which supply larger amounts of tryptophan, less niacin will be required. In fact, Holt (11) has maintained infants on diets abundant in tryptophan, but free of niacin, without observing signs of deficiency. Similar studies have not been carried out in adults.

Whether small amounts of preformed niacin are essential in human nutrition, even with large intakes of tryptophan, remains to be determined. It might be mentioned here that tryptophan has been used successfully in the treatment of pellagra by several investigators (12, 13), but large quantities must be administered.

Niacin Metabolism

While much has been learned about niacin and tryptophan metabolism in man, numerous gaps in knowledge remain. The whole story of the relationship of corn diets to the development of pellagra has not been elucidated. The present position may be summarized briefly. Essentially all of the characteristic manifestations of pellagra have been induced in human subjects given diets low in niacin and tryptophan. Pellagra appears to be a deficiency disease due to lack of niacin, or its precursor tryptophan, and not to multiple deficiency of B-complex vitamins. A relationship has been observed between the development of niacin deficiency and niacin intake per unit of body size and, also, niacin intake per 1000 calories of diet.

Since tryptophan is a niacin precursor, the tryptophan content of the diet is an important factor in the occurrence or prevention of deficiency. The minimal daily niacin requirement with diets low in tryptophan (furnishing approximately 3 mg. per kilogram body weight) is greater than 0.1 mg. per kilogram body weight. With a corn diet which contains about 200 mg. tryptophan, body niacin stores approach adequacy when the niacin intake is 8 to 10 mg. per day.

Niacin deficiency has been induced more readily with diets containing corn than with those containing wheat, and with diets containing whole corn than with diets containing degerminated corn. The low niacin and tryptophan content of corn explains, at least in part, the close association of corn diets with pellagra, but the possibility that corn contains some inhibitory factor has not been ruled out. Amino acid imbalance may also be a factor in the pellagragenic effect of corn diets.

REFERENCES

(1) Sarett, H. P., and Goldsmith, G. A.: The effect of tryptophane on the excretion of nicotinic acid derivatives in humans. J. Biol. Chem. 167: 293, 1947.

(2) Sarett, H. P., and Goldsmith, G. A.: Tryptophan and nicotinic acid studies in man. J. Biol. Chem. 177: 461, 1949.

(3) Perlzweig, W. A., Rosen, F., Levitas, N., and Robinson, J.: The excretion of nicotinic acid derivatives after ingestion of tryptophane by man. J. Biol. Chem. 167: 511, 1947.

(4) Goldsmith, G. A., Sarett, H. P., Register, U. D., and Gibbens, J.: Studies of niacin requirement in man. 1. Experimental pellagra in subjects on corn diets low in niacin and tryptophan. J. Clin. Invest. 31: 533, 1952.

(5) Goldsmith, G. A., Rosenthal, H. L., Gibbens, J., and Unglaub, W. G.: Studies of niacin requirement in man. 2. Requirement on wheat and corn diets low in tryptophan. J. Nutrition 56: 371, 1955.

(6) Goldsmith, G. A., Gibbens, J., Unglaub, W. G., and Miller, O. N.: Studies of niacin requirement in man. 3. Comparative effects of diets containing lime-treated and untreated corn in the production of pellagra. Am. J. Clin. Nutrition, in press.

(7) Mueller, J. F., and Vilter, R. W.: Pyridoxine deficiency in human beings induced with desoxypyridoxine. J. Clin. Invest. 29: 193, 1950.

(8) Amino acid imbalance. Nutrition Rev. 10: 135, 1952.

(9) Rose, W. C., Lambert, G. F., and Coon, M. J.: The amino acid requirements of man. 7. General procedures; the tryptophan requirement. J. Biol. Chem. 211: 815, 1954.

(10) Horwitt, M. K.: Niacin-tryptophan relationships in the development of pellagra. Am. J. Clin. Nutrition 3: 244, 1955.

(11) Holt, E. L., Jr.: Personal communication.

(12) Sarett, H. P., and Goldsmith, G. A.: Metabolism of L- and DL-tryptophan in normal man and in pellagrins. J. Biol. Chem. 182: 679, 1950.

(13) Bean, W. B., Franklin, M., and Daum, K.: A note on tryptophane and pellagrous glossitis. J. Lab. & Clin. Med. 38: 167, 1951.

Caffeine and Water-Drinking in Glaucoma

According to a recent study by Leydhecker, coffee need not always be restricted in glaucoma but it is suggested that for those who must indulge, one strong cup of coffee (0.1 gm. caffeine) would be preferable to several cups of weak brew. The same recommendation was made concerning alcoholic beverages, i.e., that small portions of stronger alcoholic drinks may be preferable to a large volume of beer.

In the study reported, caffeine was given three ways: as coffee (45 gm. in 150 cc. water); as 0.5 gm. intravenously; and as 0.4 gm. purified caffeine plus 150 cc. water by mouth. Ocular tension was measured before and at 15-min. intervals for an hour afterward.

Caffeine produced no significant response in normal eyes. Pathologic elevations in ocular tension were observed in 15 per cent of 172 glaucomatous eyes with initial tension of 30 mm. Hg or less, and in 22 per cent of 40 eyes with initial tension over 30 mm. Hg.

Rapid drinking of a liter of water in normal persons in the fasting state caused no significant change in ocular tension. However, in one-third of 222 glaucomatous eyes with initial tension 30 mm. Hg or less, the tension increased significantly. When initial tension was over 30 mm. Hg, pathologic elevations occurred in 77 per cent.

Apparently, ingestion of large quantities of fluid is more dangerous for glaucomatous patients than ordinary amounts of caffein.—*Abstracted from: Leydhecker, W.: Influence of coffee upon ocular tension: in normal and in glaucomatous eyes. Am. J. Ophth. 39: 700, 1955.*

Lunin's name has always intrigued those of us who are students of nutrition. We have known nothing of him except the one reference to his work under Bunge which appears in practically all of the text books. This paper provides a rare opportunity to gain information which I doubt could have been obtained in any other way and which might be forever lost unless it is printed in the *Journal*—*E. Neige Todhunter, Ph.D., Chairman, A.D.A. Committee on the History of Nutrition and Dietetics*

Nicolai I. Lunin—1853–1937

A Biographical Essay

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WHEN Clive M. McCay in 1953 published his biographical study on the physiologist G. von Bunge (1), he devoted the following sentences to one of von Bunge's co-workers: "This interest in the composition of milk led to the attempts of one of von Bunge's students, Lunin, to maintain mice upon synthetic milk. The results of these studies appeared in Lunin's thesis published at Dorpat in 1880, and in the *Zeit. Physiol. Chem.* in 1881. Lunin disappears from the scientific stage after this one brilliant appearance." Having been personally acquainted with Lunin, this writer was in a position to furnish Professor McCay some data about Lunin's further life, which gave rise to McCay's suggestion that this information be deposited in a brief biographical sketch. The writer welcomes this suggestion, as it offers an opportunity to pay homage to Lunin, the scientist and physician as well as the amiable personality.

Nicolai Ivanovitch Lunin was born January 20, 1853, in Dorpat, the university town of the then "Gouvernement" Livland of Tsarist Russia. There he attended the "gymnasium" (high school and college), graduating in 1873, and the same year entered the medical school of the University. In those days the University of Dorpat was virtually a German-speaking institution, and the medical school, especially, was represented by a number of famous teachers and scientists. McCay, in his above-mentioned biography (1), has aptly portrayed these men and illustrated their importance; thus it will suffice to refer the reader to McCay's study and only to cite such names as Friedrich Bidder, Carl Schmidt, Rudolf Buchheim, and Oswald Schmiedeberg.

Lunin was particularly impressed by the young Gustav von Bunge, who, after Lunin's graduation in 1879, suggested that for his doctoral thesis he do experimental work on the role of inorganic salts in animal nutrition. At that time (1873), Forster had just concluded a first investigation of the problem (2), in a series of experiments on the role of the ash components of food. Forster had been feeding dogs and pigeons on a diet of fat, starch, and the exhaustively water-extracted meat residues from the manufacture of "Liebig's Meat Extract." Surprisingly, these animals died sooner than the completely starved control animals. Forster concluded from this outcome that when the supply of certain salts drops below a minimum, the body loses its own salts and dies from this loss. To this, von Bunge objected that Forster had disregarded the formation of free sulphuric acid from the sulphur of protein. This acid, he emphasized, will be neutralized by the alkaline salts of the regular diet. When these salts are missing, as they were in Forster's diet, the acid is liable to deprive the tissues of their basic salts, and this distortion of the tissue composition should be considered the cause of the rapid death of Forster's test animals.

Lunin's Experiments at Dorpat

Lunin put to test this interpretation of von Bunge. Lunin employed as test animals mice fed on cane

[1] The author is greatly indebted to Dr. S. Loewe, University of Utah College of Medicine, for his assistance in the preparation and translation of this essay. Some of the data reported originate from personal communications with Professor Dr. G. Voss, Düsseldorf, and Dr. O. von Schroeder, Bevensen.

Portrait of Lunin, with his signature (in Russian) from Yefremov (3).

sugar and thoroughly washed milk curd, a precipitate by acid, consisting of about equal parts of casein and fat. This diet contained 0.05 to 0.08 per cent ash per dry weight, i.e., ten times less than Forster's diet. Mice kept on this diet lived eleven to twenty-one days. In a second test group, Lunin added to the same diet an amount of sodium carbonate calculated to neutralize the sulphuric acid that may be formed from oxidation of the entire sulphur content of the diet. These animals survived sixteen to thirty-six days—markedly longer.

To meet the objection that the longer survival was due to the supply of a missing ash ingredient of the regular diet rather than to neutralization of the acid formed, Lunin gave a third group the same amount of sodium in the form of the chloride, that is, as a neutral salt incapable of binding acid. In case the theory of the neutralizing effect was wrong, these mice should have survived longer than those fed on the carbonate. Instead, they survived only six to twenty days and thus seemed to confirm that indeed the formation of free acid was responsible for the rapid death.

In an attempt to obtain further evidence in favor of von Bunge's theory, Lunin then added to the basic diet of washed curd and cane sugar a salt mixture of the composition of milk ash as previously determined by von Bunge. With this diet, however, the animals died after twenty to thirty days; the basic diet, when supplemented by all the ash components of fresh milk, failed to maintain life any longer than when supplemented only by sodium carbonate. "This," Lunin comments, "strengthened my suspicion that the general conditions and the dietary monotony were not salutary to the mice, and that this alone was sufficient to cause death."

He therefore, under otherwise equal conditions, fed mice fresh milk concentrated to near-dryness on a steambath to prevent acid fermentation. These mice outlived two and one-half months of captivity and were in best health when set free at the end of this period. This experiment led Lunin (1880, 1881) to the definitive conclusion: "Thus, mice were able to survive perfectly well under those general conditions with an appropriate diet; as, however, they failed to survive on a diet of albuminates, fat, sugar, salts and water, it follows that, besides casein, fat, milk sugar and salts, milk must contain other substances indispensable for nutrition. A search for these substances and an investigation of their dietary significance would be of high interest."

Lunin—The Discoverer of the Vitamins?

Lunin's experiments have been presented here in detail to enable the reader to judge for himself whether Lunin's findings justify calling him the discoverer of the vitamins, as does for instance Yefremov (3). Certainly, it must be acknowledged that Lunin terminated his investigations on milk diets quite some time before the discovery of the vitamins with a conclusion which, as F. G. Hopkins stated (4), implicates all essentials of the vitamin concept. However, Lunin's experiments failed to answer the question whether the nutritional insufficiency of the thoroughly washed curds (or, as he calls them, "casein") in his dietary milk substitute was indeed due to the absence of unknown substances of the nature of vitamins or rather to any other factors including removal of soluble proteins, of protein derivatives, or of other known food components not replaceable by addition of milk ash.

In view of the gap between experiments and conclusion, Lunin's concluding statement may rather have to be evaluated as something between a prescient vaticination and, to quote Hopkins (4), an "obiter dictum." An eloquent lesson for the evaluation of Lunin's share in the discovery of vitamins is given by the attitude of Hopkins, who, despite his Nobel-laureate merits in the vitamin field, declined for himself the title of "discoverer of the vitamins," emphasizing that "the discovery was the work of many investigators." Concerning certain recent

paternity claims in behalf of Lunin, one may also consider another truly modest scientist, O. Minkowski, the discoverer with F. von Mering of the endocrine role of the pancreas in carbohydrate metabolism. As the banquet speaker at a famous scientific meeting in the late 1920s, Minkowski suggested solving the problem of the "family relationships" of the pancreas hormone. "This meeting," he said, "has celebrated me as the father of insulin and has seen emerging a number of other claimants to this title justly deserved by the Canadian discoverers of insulin. As to von Mering and myself, I might settle for the title of grandfathers; for Dr. X [the noisiest of the day's claimants], I suggest the cognomen of 'uncle of insulin.'"

It is this writer's belief that Lunin himself would rather have agreed with Hopkins' evaluation of his work than with the braggadocio currently raised by certain Soviet authors, that has resulted in creating in Russia an analogy to the American Harvey Lectures, the institution of so-called "Lunin Lectures." This belief seems to be confirmed by what Lunin's wife told this writer at her last visit to the West in 1925. In the early twenties, a high government official visited the children's hospital directed by Lunin and complained about the small number of papers published from that hospital during the past years. Lunin told him that much scientific work had really been done but that he would not yet consider the results valuable and conclusive enough for publication. Whereupon the official declared: "Nikolai Ivanovitch, that is off the point; clamor has to be raised, clamor!"

Lunin's Life as a Physician

The further course of Lunin's life turned out quite different from its beginnings under von Bunge's influence. After an internship in Dorpat, he left his homeland to complete his medical training in Western Europe. Then he moved to St. Petersburg and, after a residency at the large Oldenburg Hospital, he started as an accomplished pediatrician a rapid and highly successful career in this capital's large children's hospitals. As early as 1884 we find him the medical director of the Elizabeth Hospital for Children, and from 1885 the second director of the Nicolai Hospital for Children. A large private practice in pediatrics and in ear, nose, and throat diseases claimed more and more of his energies but left him time enough to relish extensive social activities.

In these he had a congenial partner in his sagacious and kind-hearted wife, daughter of the renowned botanist academician, K. I. Maximovitch. Being one of the country's most ardent prompters of the domestic artcrafts so widely and elaborately practiced in many districts of Russia, she turned the Lunin home into a real museum of the most beautiful fabrics and art products in metal and wood. Paintings of prominent native and foreign artists adorned the walls of their home. In that Imperial era, Lunin's city house on Kirpitshny Pereulok was a gathering-place of famous artists and scientists. None of the great arctic explorers passed through St. Petersburg without paying a visit to the Lunins, eloquent testimony to which was their collection of arctic trophies. Lunin was also a passionate hunter and dog fancier, and his English pointers repeatedly received first prizes at all-Russian shows.

In 1917 Lunin was appointed Director of the Rauchfuss Hospital for Children in St. Petersburg, a position which he resigned at his retirement age in 1925, remaining on the hospital staff as consultant until his death on June 18, 1937. As Yefremov emphasizes (3), his associates held him in highest esteem as an outstanding pediatrician, an experienced administrator, and a man of extreme fairness. His clinical experiences are published in about forty papers in various Russian and German medical journals. However, to this writer's knowledge, Lunin never came back to active vitamin research, whereas he is reported to have always manifested his enduring interest in vitamin problems by particular stress on an adequate vitamin supply in the diet of his patients.

REFERENCES

(1) McCay, C. M.: Gustav B. von Bunge (January 19, 1844–November 5, 1920). J. Nutrition 49: 3, 1953.

(2) Forster, J.: Versuche über die Bedeutung der Aschebestandtheile in der Nahrung. Zeitschr. Biolog. 9: 297, 1873.

(3) Yefremov, W. W.: N. I. Lunin. Voprosy Pitanija 13: 1, 1954.

(4) Hopkins, Sir F. G.: The Earlier History of Vitamin Research. Nobel Lecture delivered on 19th December 1929. Les Prix Nobel en 1929, Stockholm, 1930.

Partial List of Lunin's Publications[2]

Lunin, N. I.: Ueber die Bedeutung der anorganischen Salze für die Ernährung des Thieres. Doctorate thesis. Dorpat: F. Laakmann, 1880.

Lunin, N. I.: Ueber die Bedeutung der anorganischen Salze für die Ernährung des Thieres. Zeitschr. f. Physiol. Chem. 5: 31, 1881.

Lunin, N. I.: K'voprosu o liechenii nesacharnago mocheiznurenija [Treatment of diabetes insipidus]. Vrach (St. Petersburg) 4: 801, 1883.

Lunin, N. I.: Ein Fall von Stimmbildung nach Zerstörung des einen Stimmbandes. Med. Wochenschr. (St. Petersburg), N. F. 1: 173, 1884.

Lunin, N. I.: Ein Beitrag zur Therapie des Diabetes insipidus. Jahrb. f. Kinderheilk., N. F. 21: 420, 1884.

Lunin, N. I.: Ein Beitrag zur Therapie und Statistik der Diphtherie. Med. Wochenschr. (St. Petersburg), N. F. 2: 45, 53, 61, 69, 1885.

Lunin, N. I.: [Preservation of health. Short manual for introduction of military surgeons.] Moskva: A. A. Kertseva, 1887.

Lunin, N. I.: [Naphthalin in diarrhea of children.] Vrach (St. Petersburg) 8: 685, 1887.

[2] Incomplete; Russian publications from the later periods are not accessible.

LUNIN, N. I.: [Impediments to the removal of the cannula after tracheotomy.] Vrach (St. Petersburg) 9: 318, 1888.

LUNIN, et al.: [Action of various antipyretic drugs in the treatment of typhoid fever in children on variations of temperature and state of disease.] Trudi Obsh. Dietsk. Vrach (St. Petersburg) 1889, p. 73.

MASING, E., AND LUNIN, N. I.: Discussion über die Behandlung der Diphtheritis. Med. Wochenschr. (St. Petersburg), N. F. 9: 66, 1892.

MASING, E., AND LUNIN, N. I.: Discussion über die Behandlung der Diphtheritis. Zeitschr. f. Therap., Electro- u. Hydrother. 10: 41, 49, 1892.

LUNIN, N. I.: [Sarcoma of the abdominal cavity in a child of 2 years.] Vrach (St. Petersburg) 15: 265, 1893.

LUNIN, N. I.: [Two cases of malignant tumors in the naso-pharynx of children.] Trudi Obsh. Dietsk. Vrach (St. Petersburg) 9–10: 41, 46, 1896.

LUNIN, N. I.: [Paracentesis pericardii in a six-year-old boy.] Bolnitsh. Gaz. Botkina 9: 321, 1898.

LUNIN, N. I.: [The islands of Langerhans in the pancreas and their relationship to diabetes.] Vrach. Gaz. (St. Petersburg) 19: 1245, 1907.

LUNIN, N. I.: [Tuberculosis of the bronchial glands.] Vestnik Ushn., Gorlov. i Nosov. Boliezn. (St. Petersburg) 3: 722, 1911.

LUNIN, N. I.: [On the Heine-Medin disease.] Pract. Vrach (St. Petersburg) 10: 801, 1911.

LUNIN, N. I.: [Active and passive immunization in scarlet fever, diphtheria, and measles.] Trudi Chetvert. Vsessous. Siezda Dietsk. Vrach 4: 146, 1927.

LUNIN, N.: Erfahrungen mit dem antitoxischen Scharlachserum. Deutsch. Med. Wochenschr. 53: 451, 1927.

LUNIN, N. I., AND GANDELMAN, M. R.: [Simplified method of immunization against diphtheria.] Sovet. Vrach. Gaz., 1934, p. 89.

Ischemic Heart Disease

"Ischemic heart disease" is of paramount importance as a public health problem, according to a World Health Organization Study Group on Atherosclerosis which met in Geneva, Switzerland in November, under the chairmanship of Dr. Herman Hilleboe, New York State Commissioner of Health. In "ischemic heart disease," the main pathologic processes involved are atherosclerosis and thrombosis of the coronary arterial system. The most clearly recognized type of ischemic heart disease is myocardial infarction due to coronary obstruction (angina pectoris).

The Study Group, in recommending an international program of research into the cause and prevention of heart disease, noted that "striking and challenging differences" are observed from one country to another, but the interpretation of their significance is difficult. In the United States, the United Kingdom, and Sweden, many more men than women die from ischemic heart disease between the ages of forty and sixty, but in the Netherlands, female mortality is higher.

Diet, as well as obesity, may be an important factor. But there are populations containing many obese individuals with far less ischemic heart disease than in the United States and Britain, for instance. Calculations based on U. S. life insurance data indicate that, if all markedly overweight persons were removed from the U. S. population, the mortality from ischemic heart disease in the remainder would still be much higher than in some other populations, for instance, those of Norway, Italy, or Japan, even though obesity is by no means rare in the latter countries.

The Study Group also noted that populations on low-fat diets appear to suffer a relatively low incidence of artherosclerosis and ischemic heart disease, and that in Europe during the war, the reduction of fat consumption was parallelled by a lowering of mortality from heart disease.

Occupational and social status may also be factors; professional and business men suffer from ischemic heart disease more frequently and more severely than people in more physically active jobs. The Study Group added that high blood pressure is often evidence of cardiac damage, but that this association is by no means universal.

The relationship between heavy smoking and cardiovascular disease is becoming more obvious, the Study Group found. High alcoholic consumption is also connected with an excessive death rate and statistics gathered in several countries have shown that barmen, for instance, are especially prone to cardiovascular and kidney diseases.

Declaring that the search for a possible meaningful association between ischemic heart disease and diet or physical activity is one of the most difficult tasks in medical research, the Group recommended that uniform procedures and methods of observation and recording should be established, and indicated the lines of research to be followed in pilot studies to be undertaken under the sponsorship of the World Health Organization.

The Study Group concluded that in the present state of knowledge, the only advice it could give on the prevention of heart disease was, "Be moderate in all things". This advice of moderation, the experts held, has the real value of being directed at the same time at such conditions as obesity, alcoholism, heavy smoking, and over-indulgence in many other activities. Concluding on an optimistic note, the WHO Study Group stated that the outcome of the studies and researches it has recommended should enable preventive programs to be established in the not too distant future.

Actual performance of the homemaker in feeding her family was found to be considerably better than her theoretical knowledge on the subject. However, the food groups about which knowledge was weakest were also those most poorly used. The adequacy of food used appeared to be related to nutritional knowledge.

What the Homemaker Knows about Nutrition

III. Relation of Knowledge to Practice[1]

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IS BETTER knowledge of nutrition associated with better eating practices? Does the homemaker who knows more about nutrition feed her family more adequately? A study of Richmond, Virginia homemakers in 1947 (3) indicated that this probably was true. Six out of ten homemakers who had some knowledge of nutrition served "an adequate daily menu"; only 40 per cent with little or no knowledge did.

To gain additional information on these questions, the nutritional knowledge of the homemaker and her practices in feeding her family were investigated in the fall of 1953 simultaneously in Rochester and Syracuse, New York. A representative cross-section sample of 331 Rochester and 315 Syracuse homemakers was used. Previous reports have covered the general plan of the study, a description of the sample, and the homemakers' apparent knowledge of nutrition (4, 5). The present report is devoted to the actual feeding practices used by the homemaker and particularly the relationship between the adequacy of meals served and her apparent nutritional knowledge.

Method

The primary objective of the study was to learn what the homemaker knew about food and nutrition as applied to feeding her family. Though the investigation was obviously not designed to be primarily a dietary inquiry, some information was obtained on food usage, both from a qualitative, and to a limited extent, quantitative standpoint. Qualitative information on feeding practices was obtained through questions related to: food served to the family in the previous 24 hr.; whether these meals were typical or usual; and if not, how they differed. There were also questions concerning the usual beverage or beverages drunk by the adults and by the children at each meal.

Somewhat more quantitative information was obtained by questions concerned with the amounts of certain key foods either purchased or used in the previous week, including milk in all its forms; eggs; meat, fish, and poultry; citrus fruits, tomatoes, and their juices; vegetables; and breadstuffs. These quantities were related to the combined needs of the adults and the children of various ages and sexes served by the household. The qualitative information on the food served in the previous 24 hr. was tabulated for the presence or absence of the basic food groups. Various factors, such as the age and education of the homemaker, her previous study of "what to eat," and family income were studied for relationship to the feeding practices reported.

Finally, data on feeding practices and apparent nutritional knowledge of the homemaker were related by comparing the practices of those with little or no nutritional knowledge with those who indicated a fair knowledge of nutrition. Such a comparison is difficult at best. However, the paucity of information of this field makes the reporting of these limited data desirable.

[1] This research was supported in part by an appropriation from the State of New York through the State University. Received for publication September 15, 1955.

TABLE 1

Percentage of homemakers using each food group

FOOD GROUP	PERCENTAGE OF HOMEMAKERS USING EACH FOOD GROUP					
	Urban communities			Rural areas		
	Rochester	Syracuse	Richmond, Virginia (3)	Appomattox County Virginia (6)	Richfield Springs school district, New York (7)	Van Hornesville school district, New York (7)
Meat, fish, poultry	99	99	99	98	97	99
Potatoes, other fruit and vegetables	92	93	95	95	96	98
Milk, cheese, and ice cream	82	87	97	87	84	88
Bread, flour, and cereal	99	99	100	99	100	99
Butter or fortified margarine	78	74	100	94	92	80
Leafy, green or yellow vegetables	65	60	80	88	63	60
Citrus fruit, tomatoes, cabbage	72	71	72	75	74	79

TABLE 2

Usual adult beverages

BEVERAGE	PERCENTAGE OF HOMES*	
	Rochester	Syracuse
Breakfast		
Coffee	93	93
Tea	4	2
Milk	13	13
Noon Meal		
Coffee	40	43
Tea	29	30
Milk	44	33
Evening Meal		
Coffee	55	56
Tea	24	31
Milk	31	26

* More than one beverage was frequently mentioned.

Food Used in Previous 24 Hr.

The percentage of homemakers who included the various basic food groups in food served in the previous 24 hr. is given in Table 1. For comparative purposes, the data from three other studies (3, 6, 7) are included.

In both Rochester and Syracuse, 85 per cent of the homemakers said that the food served over the 24-hr. period was usual or typical. A variety of reasons was cited for the 15 per cent who gave "atypical" days, including eating out, being too busy, illness, and so on. Most of the atypical features would not appear to influence the inclusion of any one of the basic food groups with the possible exception of more meat dishes. Since the meat group was used by 99 per cent of the homemakers, the effect on this qualitative measure would be unimportant.

All seven food groups were included during the day by 41 per cent of the Rochester and 39 per cent of the Syracuse homemakers; six food groups by 32 and 37 per cent, respectively; five food groups, by 18 and 17 per cent; four of the groups by 7 and 6 per cent. Only 2 per cent in Rochester and 1 per cent in Syracuse used as few as only three food groups. These figures are somewhat lower than those from urban Virginia (3), where half the homemakers served foods from all seven groups, but almost identical with those reported for rural Virginia (6) and rural New York (7).

The performance of the homemaker in feeding her family, at least on a qualitative basis, was considerably better than her knowledge. A substantially higher percentage used various food groups in meals than either mentioned the group or knew any reason for inclusion of it (5). However, it is interesting that those food groups which were least well known (either in terms of mentioning the food or in terms of knowing a reason for inclusion) were also the least used. These include green, leafy or yellow vegetables; the citrus fruits, tomato, or cabbage groups; and milk. The apparent lower usage of butter or margarine may have been merely failure to mention the item as such. These were the four groups most poorly used in all of the studies reported.

Beverages

The usual beverage drunk by children was milk for three meals a day in 91 per cent of the Rochester and 93 per cent of the Syracuse homes; 8 and 6 per cent of the homes respectively, reported milk used by children twice a day; and only 1 per cent in either city once a day.

The usual adult beverage or beverages was a different story (Table 2). Milk was used as a breakfast beverage in only 13 per cent of the homes; as a noon meal beverage in 33 to 44 per cent; and as an evening meal beverage in 26 to 31 per cent of the families. Obviously, milk was not widely used by the adults.

Meal Patterns—Breakfast and Lunch

Meal patterns at breakfast and at lunch may be meaningful in evaluating feeding practices. In the two cities there was remarkable similarity in the percentages of homemakers who served similar

TABLE 3

Food use in previous week relative to recommended amounts

FOOD GROUP	ADEQUACY LEVEL	PERCENTAGE OF HOMES	
		Rochester	Syracuse
Milk	Less than 50% of recommended amount*	20	19
	90% or more of recommended amount*	34	31
Meat, fish or poultry	2 lb./week/person over 10 yr.		
	1 lb./week/child under 10	91	88
Citrus fruit, tomato, or juices	Less than 50% of recommended amount†	21	20
	90% or more of recommended amount†	51	44

* Based on 1 pt. per day for adults; 1 qt. per day per child.
† Based on one serving citrus fruit per person per day.

types of breakfasts and lunches for adults. In only 1 to 2 per cent of the homes was breakfast not served to adults; in 6 to 10 per cent, only some carbohydrate-rich food and coffee—or coffee alone—were served. Most interesting was the fact that nearly two-thirds (62 to 64 per cent) of the homemakers reported a breakfast consisting of a fruit, a carbohydrate-rich food, and some protein-rich food such as egg and/or milk.

Lunch patterns were examined in terms of the presence of a substantial amount of protein and the form in which it appeared. In only 2 or 3 per cent of the homes did the adults not have lunch. In approximately 10 per cent, no substantial source of protein was served. In both cities, approximately half the lunches contained a good protein source and sandwiches; nearly one-third, in the form of a prepared hot dish; in 3 to 10 per cent, in the form of a cold dish.

Food Practices on a Quantitative Basis

An estimate of the adequacy of feeding practices on a quantitative basis, together with the standards used in evaluating adequacy, is presented in Table 3. Quantities are based on recall of the food purchased and used over the previous week.

Approximately one-fifth of the families in both cities used less than 50 per cent of the suggested amount of milk, while about a third met or nearly met the recommended amount. For citrus fruit or substitutes, about half used the suggested amount while one-fifth received less than approximately half. As in the case of qualitative measures, quantitatively meat and meat substitutes were much more adequately used.

Age of Homemaker and Practices

Differences between age groups of homemakers with respect to actual performance in family feeding were not as great as they were with respect to nutritional knowledge. However, the young homemakers (under forty years) appeared to do a somewhat better job in feeding their families than the middle aged (forty to sixty years) or old (over sixty years) homemakers. The percentage of homemakers who used milk products decreased as the age increased; for example, in Rochester, from 90 to 79 to 67 per cent. The same relationship held for the use of citrus fruit. Also, a higher percentage of the young homemakers used all seven of the basic food groups in their menus and had more desirable breakfast and luncheon patterns. Much of the differences between the age groups may have centered about the use of milk; a higher percentage of the younger homemakers used milk as an adult beverage than was true for the older women. More of the older homemakers used less than 50 per cent of the suggested milk needs.

Educational Level and Practices

Of the various factors studied, it has been shown previously (5) that the educational attainment of the homemaker showed the greatest relationship to her nutritional knowledge. This also held for the adequacy of feeding practices. In general, homemakers who graduated from high school had better practices than those who had only some high school, and these in turn, had better practices than those who attended grade school only. With increased education, a higher percentage of homemakers used all seven of the basic food groups in their menus. In both cities, twice as high a percentage of homemakers who graduated from high school served all seven groups as did homemakers who had a grade school education or less (Rochester, 53 per cent vs. 26 per cent; Syracuse, 47 vs. 25).

The percentage using a specific food group also became greater as education increased. This was particularly noticeable in those food groups where knowledge makes a difference, i.e., milk, cheese, and ice cream—an increase from 69 through 93 per cent (Rochester) or 77 through 93 (Syracuse). For the citrus fruit, tomato, or cabbage group, as education increased, the increase in use was from 57 to 82 per cent for Rochester and from 54 to 81 per cent for Syracuse. These differences were further accentuated when those homemakers with an education of six grades or less were compared with those who attended college.

Educational level had no noticeable effect on the

food groups used more or less traditionally, such as the meat, fish, and poultry; bread, flour, and cereal; or potato and other fruit and vegetable groups. Educational level, however, had a pronounced effect on breakfast patterns. The percentage of homemakers who served adults the more complete breakfast of fruit, carbohydrate-rich food, and milk and/or eggs increased from 47 to 72 per cent as education advanced from eighth grade or less to high school graduation. The breakfast consisting largely of carbohydrate-rich food was served by 21 per cent of the less educated homemakers and only 12 per cent of the better educated group.

With increased educational attainment, a higher percentage of homemakers used milk as an adult beverage. This was particularly true at noon when the percentage doubled.

From a quantitative aspect, too, feeding practices were better at the higher educational levels. A greater percentage of the well educated homemakers met the quantitative needs for foods, such as milk and citrus fruits, and a lower percentage of these homemakers were in the really low intake groups, i.e., below 50 per cent of the calculated needs. Again, percentage differences in relation to practice were not as great as the differences in nutritional knowledge at the various educational levels.

Income and Practices

Though increases in income level brought some increase in the adequacy of feeding practices both qualitatively and quantitatively, the increases were neither as consistent nor as great in magnitude as was true with increases in educational level. That the effect which was present probably was primarily one of education was shown by a simultaneous examination of the effects of both education and income. As educational level increased within an income bracket, the percentage of homemakers who used all seven basic food groups increased. This was not true as income increased at a given educational level (Table 4). The same trend held for the use of citrus fruit, of milk in the meals, and for the serving of the more adequate breakfast patterns.

TABLE 4

Homemakers using all seven basic food groups at various income levels

EDUCATIONAL LEVEL	PERCENTAGE OF HOMEMAKERS USING SEVEN BASIC FOOD GROUPS					
	Rochester			Syracuse		
	Under $3500 income	$3500–4999 income	$5000 income and over	Under $3500 income	$3500–4999 income	$5000 income and over
8th grade or less	27	25	15	26	25	29
Some high school	37	51	38	24	37	38
High school graduate or more	50	38	65	42	51	49

Study of Foods and Practices

The differences in feeding practices of those who had "studied about what to eat" and those who had not were not as great as the differences between the two groups in respect to their knowledge of nutrition. However, there were differences in the use of some food groups, especially milk and milk products. In Rochester, 75 per cent of the homemakers who had not studied foods mentioned milk in their meals of the previous day, while 93 per cent of those who had, did. In Syracuse, the percentages were 85 and 91, respectively. Much the same relationship was shown on a quantitative basis for the adequacy of use of certain food items (Table 5).

In both cities, more of the homemakers who had studied about what to eat had used all seven of the basic food groups than did those who had not.

The findings quoted above are similar to those of the Richmond, Virginia study (3), where most of the homemakers who served adequate menus were under forty-four years, in the middle or upper income groups, and were high school or college graduates. In the rural New York areas studied by Abell (7), when inclusion of all seven food groups in the day's menu was examined, an increased proportion of homemakers served these foods at three increasingly higher levels of net family income. This was also true for a higher proportion of homemakers in families in which someone in the family had home economics training than in those families with no one so trained.

Nutritional Knowledge and Performance

Finally, theoretical nutritional knowledge of the homemakers showed a relationship to the feeding practices. Homemakers were divided into three

TABLE 5

Quantitative food usage related to study of foods

FOOD GROUP	ADEQUACY LEVEL	PERCENTAGE OF HOMEMAKERS			
		Rochester		Syracuse	
		Not studied	Studied	Not studied	Studied
Milk	Less than 50% of recommended amounts	26	10	23	14
	90% or more of recommended amounts	32	38	33	29
Citrus fruit, tomato or juices	Less than 50% of recommended amounts	25	15	24	14
	90% or more of recommended amounts	47	61	40	51

TABLE 6

Nutritional knowledge and use of food groups

FOOD GROUP	PERCENTAGE OF HOMEMAKERS					
	Rochester			Syracuse		
	No knowledge	Some knowledge	Minimal knowledge	No knowledge	Some knowledge	Minimal knowledge
Meat, fish, poultry	98	99	100	100	97	100
Potatoes, other fruits and vegetables	89	93	97	92	91	96
Milk, cheese, ice cream	71	88	95	82	90	89
Bread, flour, or cereal	99	99	100	99	100	100
Butter or fortified margarine	93	93	98	97	99	97
Leafy, green or yellow vegetables	62	65	71	61	55	66
Citrus fruit, tomatoes, cabbage	69	74	78	59	75	81

groups according to their knowledge of nutrition: those with no or entirely erroneous knowledge, those with some knowledge, those with "minimal" knowledge.[2] Feeding practices were compared for each group. Table 6 shows the nutritional knowledge of the homemaker as related to her use of the various food groups over a 24-hr. period. The tabulation is in terms of the percentage of homemakers at each level of knowledge who reported using a particular food group. In general, though the percentage differences were not great, as knowledge increased a higher proportion of the homemakers used each group except for the more or less conventionally included items, the usage of which does not depend on knowledge. Differences were particularly noticeable for items where education might be expected to lead to a discriminatory difference, such as milk, cheese, and ice cream, and the kind of fruit or vegetable, such as green, leafy or yellow vegetables or citrus fruit, tomatoes, or cabbage.

Table 7 gives a comparison of knowledge with performance in terms of the percentage of homemakers in each group whose food use met or failed to meet various levels of the family need for: milk; meat, fish, or poultry; and citrus fruit, tomato, or their juices. Again, though differences are not large, the best performance tended to be associated with the greatest knowledge.

A decidedly greater percentage (48 per cent) of homemakers with a "minimal" knowledge of nutrition used all seven basic food groups in their menus than was true for those with no knowledge (31 per cent). Those with some knowledge were in an intermediate position (39 per cent). Also, as nutritional knowledge increased, a higher percentage of homemakers served better quality breakfasts of fruit, carbohydrate, and protein, such as milk and/or eggs: with "no" knowledge, 51 per cent; "some," 62 per cent; and with "minimal," 76 per cent. The percentage who had either no breakfast or the coffee and/or carbohydrate-only breakfast decreased as nutritional knowledge increased.

[2] "Minimal" knowledge was defined previously (5) as the ability to give a correct reason for the inclusion of at least three of the seven basic food groups.

TABLE 7

Nutritional knowledge and performance in meeting family needs

INTAKE LEVEL	PERCENTAGE OF HOMEMAKERS					
	Rochester			Syracuse		
	No knowledge	Some knowledge	Minimal knowledge	No knowledge	Some knowledge	Minimal knowledge
Milk						
Less than 50% of need	27	15	14	21	21	14
90% or more of need	30	41	35	37	27	30
Meat, Fish, or Poultry						
2 lb./week/person over 10 yr. 1 lb./week/person under 10	85	90	86	84	87	96
Citrus Fruit, Tomatoes, or Their Juices						
Less than 50% of needs	25	24	8	27	22	15
90% or over of needs	46	51	71	41	41	52

Summary

Actual performance of the homemaker in feeding her family was considerably better than her theoretical knowledge of what to feed them. However, the food groups about which the homemakers' knowledge was weakest were also those most poorly used: namely, citrus fruits, tomatoes, and cabbage; green, leafy and yellow vegetables; and milk, cheese, and ice cream.

The differences between age groups of homemakers were not as great with respect to feeding performance as with respect to nutritional knowledge. However, the younger homemaker appeared to do a more adequate job in feeding her family than the older homemaker, perhaps due to the superior level of educational attainment of the younger homemaker.

Of the factors under study, the level of educational attainment appeared to be the one most consistently related to adequate performance in family feeding. The effect of income level was considerably less consistent and of smaller magnitude.

Both qualitatively and quantitatively, those homemakers who reported having studied "about what to eat" had better feeding practices for their families than those who had not.

Finally, the adequacy of food used appeared to be related to nutritional knowledge. A higher percentage of homemakers with a "minimal" knowledge of nutrition had adequate feeding practices than was true for those with some or no knowledge.

REFERENCES

(1) WILHELMY, O., JR., YOUNG, C. M., AND PILCHER, H. L.: Nutritional status survey, Groton Township, New York. 3. Nutrient usage as related to certain social and economic factors. J. Am. Dietet. A. 26: 868, 1950.

(2) YOUNG, C. M., STREIB, G. F., AND GREER, B. J.: Food usage and food habits of older workers. A.M.A. Arch. Indust. Hyg. 10: 501, 1954.

(3) BUREAU OF AGRICULTURAL ECONOMICS: Homemaker's Acceptance of Nutrition Information in an Urban Community. U.S.D.A. Mimeo report, February 1948.

(4) YOUNG, C. M., BERRESFORD, K., AND WALDNER, B. G.: What the homemaker knows about nutrition. 1. Description of studies in Rochester and Syracuse, N. Y. J. Am. Dietet. A. 32: 214, 1956.

(5) YOUNG, C. M., WALDNER, B. G., AND BERRESFORD, K.: What the homemaker knows about nutrition. 2. Level of nutritional knowledge. J. Am. Dietet. A. 32: 218, 1956.

(6) CAMERON, J. L.: Study of Nutrition Information and Food Production and Conservation Practices of Rural Homemakers in Appomattox County, Virginia, July, 1951. Mimeo report, V.P.I. Extension Serv., Blacksburg, Va., April, 1952.

(7) ABELL, H. C. (Dept. of Rural Sociology, Cornell Univ., Ithaca, N. Y.): Unpublished data.

Do We Fail to Communicate *with Patients?*

Why do patients fail to follow instructions? Is one reason that we do not make ourselves understood? With this thought in mind, Gretchen Collins made a study of the vocabulary-understanding of 100 antepartum clinic patients (*J. Florida M.A. 42: 111, 1955*).

She listed twenty words commonly used by nutritionists and dietitians in talking to patients:

nutrition	vitamins	lean meat	proteins
diet	hemoglobin	margarine	starches
pregnancy	dried milk	citrus fruits	balanced diet
maternity	yellow vegetables	enriched	anemia
well nourished	constipation	egg yolk	rickets

To assist the subjects in defining a word, each was used in a sentence. Any reasonable definition was accepted, and no time limit was imposed.

The subjects were women from fifteen to forty-six years of age (average, twenty-six). Half had elementary school education, while the other half had some degree of high school education. About 80 per cent read regularly or occasionally. Forty-five per cent came from rural homes.

Findings indicated that only 17 per cent understood 16 or more of the 20 words (none understood all 20); about a third understood less than half. Ninety per cent had some understanding of *pregnancy*, *constipation*, *margarine*, *starches*, and *diets*. The words least understood (fewer than 20 per cent) were: *anemia*, *rickets*, *hemoglobin*, *enriched*, and *protein*. The average number of words understood was only 12. Those who had gone to high school understood an average of 13.4; those without high school education, 10.4.

No difference was found between rural and urban subjects, and the presence of a radio in the home had no effect on the score.

Some of the patients' answers were surprises. *Maternity* meant a type of dress to most. *Anemia* was frequently defined as "enema." *Vitamins* meant pills which were seldom related to food or nutrition. One-fourth did not know which part of the egg was the yolk. Local customs and the vernacular were also evident in some of the replies: "do you mean margar*een*?" With milk, "powdered," not "dried," was the term most frequently used.

The nutritionist's familiarity with medical terms makes it hard for her to see any mystery about an instruction, such as: *The bread in your diet should be enriched, but starches, in general, should be limited. Use plenty of lean meat and other proteins.* Even when patients have frequently heard the terms, their interpretation may be erroneous. For instance, to many of these women, rickets meant a "shaky" baby, and *well nourished* meant a "nervous" body.

In our conversations with patients, we should try (without being condescending) to be certain that they understand what we mean by even the simplest medical terms. Failure to make ourselves clearly understood by patients may contribute to their non-compliance. An apparent unwillingness to cooperate may actually be an inability to comprehend.—*From* PB (*Eli Lilly and Company*) *21: 14 (Jan.), 1956.*

Non-Caloric Sweeteners and Weight Reduction[1]

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INTEREST in the problems of obese individuals has mushroomed in recent years—largely because of the mortality statistics furnished by life insurance companies. Advertisers, quick in following a trend and anticipating the desires of Miss, Mrs., and yes, even Mr. Average America, have aided and abetted this interest. Along with multitudinous wonder aids for weight (and pocketbook) reduction, a variety of non-caloric sweeteners, low-calorie salad dressings, puddings, soft drinks, fruits, jellies, jams, candies, gelatin desserts, breads, and cook books with special recipes using non-caloric sweeteners have appeared on the market in great profusion. Such phrases as "light," "no sugar," "no fat," "non-fattening," "thinning," "sugar-free and "calorie controlled" are commonplace today.

The technologic problems concerned with the use of these products, such as the concentration to be used and the temperature and method of food processing that results in the most palatable product, have been the subject of many studies (1–6). Anderson and co-workers (7) reported little difference in the acceptability of canned fruit sweetened with sucrose, cyclamate sodium, or saccharin. Sweetened fruits were unanimously chosen as more desirable than water-packed fruit.

Likewise, considerable research concerned with the physiologic aspects of the use of non-caloric sweeteners has been conducted (8–11). Sheffield and Roby (12) reported that hungry animals respond to a stimulus-pattern related to the availability of saccharin while satiated animals do not. Hausmann (13), in work with albino rats, found that both glucose and saccharin solutions were preferred to water by animals on an *ad lib* diet. When animals drank sugar solutions, they reduced their food intake to keep their total caloric intake constant. However, the animals were not "deceived" by the taste of saccharin, since the drinking of saccharin solutions did not affect food intake.

Likewise Mayer and co-workers (14) conducted similar studies on animal food consumption in the presence of unaltered drinking water, drinking water containing sucrose, and drinking water containing non-caloric sweeteners. Both saccharin and Sucaryl were used in the studies and were in solutions identical in sweetness to the 5 per cent sucrose solution employed. Studies were made on normal animals and on three types of obese animals: hereditary obese mice, goldthioglucose obese mice, and hypothalamic obese rats. These workers concluded that the animals tested compensated by a decreased food intake for the extra calories consumed as sucrose in their drinking water. Non-caloric sweeteners did not affect the intake of food or water.

Does the use of such products help the obese patient stay on his diet and so lose weight? Do diabetic and obese individuals find the taste of these products acceptable? An answer to these questions was sought by the nutritionists of the Department of Nutrition of the Harvard School of Public Health in cooperation with the Dietary Department of the Peter Bent Brigham Hospital.

The Department of Nutrition has been interested in human and animal obesity for more than ten years. During the past few years, attempts have been made to evaluate methods of instruction for weight control. For comparative purposes, one- and two-year follow-up studies of subjects who participated in two reducing programs, group therapy and individual instruction, were evaluated (15). To determine the effectiveness of reducing regimens *per se* on a long-term basis, a three-year follow-up study was also undertaken (16). In addition, the participants of the three-year follow-up study and two other groups of obese and diabetic subjects were studied regarding their use of non-caloric sweeteners. These results are reported here.

[1] Presented at the 37th Annual Meeting of The American Dietetic Association, in Philadelphia, on October 26, 1954.

Method

Three groups of individuals were questioned about their use of non-caloric sweeteners and artificially sweetened products. Group 1 was composed of 147 obese individuals who were subjects in the three-year follow-up study (16). Group 2 consisted of 100 obese patients referred to the Nutrition Clinic of the Peter Bent Brigham Hospital. Group 3 was made up of 100 diabetic patients referred to the Diabetic Clinic at the Hospital. In addition, the age and sex distribution and the diagnoses of Group 2 were appraised.

Findings

Of the 247 obese subjects in Groups 1 and 2, 105 (43 per cent) and 80 of the 100 diabetic subjects were using or had used non-caloric sweeteners and/or artificially sweetened products. If this is a representative sample of the overweight and diabetic population, the inclusion of such products in diets of these individuals has become relatively common, especially among persons with diabetes.

To attempt to determine the effectiveness in weight reduction of the use of non-caloric sweeteners, the data from the follow-up study on Group 1 were analyzed with respect to weight loss and the use or non-use of non-caloric sweeteners. About half (49 per cent) of these subjects were using or had used these products. Their weights before the weight reduction program and at the time of the three-year follow-up study were tabulated. The percentage of the initial percentage overweight lost or gained was determined. Sixty-five per cent of both groups (users and non-users) lost some weight. No significant difference in weight loss between the groups was apparent. The results are shown in Table 1.

A study was made of the length of time non-caloric sweeteners were used and the weight loss in Group 1. The length of time the products were used did not alter the weight change pattern, as shown in Table 2.

Of the 100 patients in Group 2, 33 were users of non-caloric sweeteners. The weight loss of these subjects while using non-caloric sweeteners and artificially sweetened products was not evaluated because of the short time they had been on the reducing regimen and because the accuracy of the reported weight loss would depend on the reliability of the patients' memory and their wish to be accurate. However, of the 33 patients who had used the products, 11 (33 per cent) believed they lost weight and had received definite help by employing such products; 22 said they had either gained weight or their weights had remained the same.

An attempt was made to find out if the degree of overweight was associated with the use of non-caloric sweeteners. Of the 247 subjects in Groups 1 and 2, 67 were 50 per cent or more above their desirable weight; of these, 36 (54 per cent) used non-caloric sweeteners and 31 (46 per cent) did not. No relationship between degree of overweight and the use of non-caloric sweeteners was evident.

A tabulation of the acceptability of non-caloric sweeteners and artificially sweetened products was also made. Although these products were used by about half of the obese subjects and by 80 per cent of the diabetic subjects, generally they were not too popular. Only 26 per cent of the obese subjects stated that they liked the products. Their use among the obese has not resulted in a high degree of flavor acceptability. The observations do indicate a higher degree of acceptability among the diabetic subjects. Of the 80 diabetic persons who used non-caloric sweeteners and/or artificially sweetened foods, 43 (54 per cent) stated that they liked the products and 57 (71 per cent) said that these products were helpful to them in their diets.

Generally the use of the non-caloric sweeteners by the obese subjects was limited to sweetening tea and coffee and occasionally cereal, dessert, and fruit. The actual use of artificially sweetened foods by this group was small. Of the 80 diabetic subjects who used these products, 52 (65 per cent) used artificial sweeteners only, 21 (26 per cent) used both artificial sweeteners and artificially sweetened foods, and 7 (9 per cent) used only artificially sweetened foods. Soft drinks were used by 18 persons, gelatin dessert by 6, fruit by 5, jellies by 2, and pudding by 1. (Some individuals used more than one type of artificially sweetened food.)

TABLE 1

Weight status of 147 obese subjects at time of three-year follow-up study

WEIGHT STATUS	OBESE SUBJECTS	
	Used artificial sweeteners	Did not use artificial sweeteners
Lost weight	47	49
Gained weight or had no change in weight	25	26
Total	72	75

TABLE 2

Time non-caloric sweeteners and/or artificially sweetened foods were used, as related to weight status of 72 obese subjects

WEIGHT STATUS	OBESE SUBJECTS	
	Used artificial sweeteners less than 1 year	Used artificial sweeteners more than 1 year
Lost weight	24	23
Gained weight or had no change in weight	13	12
Total	37	35

In the appraisal of Group 2, it was found that the mean age of the subjects was 48 years. Eighty-two were over 40, and half were over 50 years of age. These findings correspond with studies of age distribution in the same clinic in other years. Only 14 patients were men, and of these, only one was under 40. The patients were grouped according to age and relative percentage of overweight. A wide range occurred, with the extremely heavy persons being in the over-40 group.

Since much emphasis has been placed on the psychologic problems of the obese, the diagnoses of the 100 patients were studied. Only 17 per cent were given a diagnosis of psychoneurosis or anxiety neurosis. The diagnosis of cardiovascular disease, arthritis, hypertension, or combination of these diseases occurred in only one patient under 40, and in more than 50 per cent of those over 40 years of age.

Discussion

By and large, weight reduction regimens, when considered from the long-range point of view, are quite unsuccessful. Many aspects of obesity are yet unknown or little understood. Certainly, little is known of methods of motivation that are effective over an extended period of time. It is obvious that there is no one key to the problem of obesity. The use of non-caloric sweeteners and artificially sweetened foods when considered on a group basis appears to be of no particular value in a reducing program. However, it is well to remember that it is the individual who is losing weight, not the group. Therefore, if one out of four or five individuals believes that he is helped to some extent and if the products are considered safe, the use of non-caloric sweeteners may have a place in the diets of some obese individuals.

Diabetic individuals in this study used these products to a greater extent than did the obese subjects, perhaps because they fear the physical consequences of dietary indiscretion. They as a group show more motivation to forego extra amounts of food and to adhere to a diet than do obese individuals. It would be of interest to study the use of these products in a representative group of diabetic persons of both sexes in various age groups, since many new products continue to appear on the market.

It is evident that the preventive aspects of obesity treatment were not considered in the clinic studied. Evidently men and women and especially men do not visit a clinic, primarily because of a weight control problem. Only 14 per cent of the patients were men. Data from insurance companies and clinical experience indicate that it is the obese male rather than the obese female who has increased mortality. It is apparent that nutrition clinics, assuming that this sex distribution will be found elsewhere, are not fulfilling their purpose from a public health standpoint. It is of interest that only one man was under forty years of age. While it may be true that the percentage of males who are obese and under forty may be relatively small, it is generally accepted that the mortality rate of the young obese male is dangerously high.

The preventive aspects of weight control should be stressed, since most attempts at long-term weight control along curative lines have so far failed. The old adage, "An ounce of prevention is worth a pound of cure," is more apt today than we realize.

Summary

Two hundred forty-seven obese individuals and 100 diabetic subjects were questioned about their use of non-caloric sweeteners and artificially sweetened foods. Forty-three per cent of the obese subjects and 80 per cent of the diabetic subjects were using or had used these products. No significant difference was apparent when the weight loss of users and non-users of these products was compared. No correlation was found between the length of time these products were used and weight loss, nor was the degree of overweight associated with the use of these products.

The products were generally not too popular among obese individuals. There was a higher degree of acceptability among the diabetic subjects.

In a study of the age and sex distribution and diagnoses of the 100 obese clinic patients in Group 2, it was noted that 82 per cent of the subjects were over forty years of age. Only 14 per cent of the patients were men. Most of the patients did not visit the clinic primarily because of a weight control problem but rather because of some physical or psychosomatic problem.

REFERENCES

(1) ADAM, W. B.: Control of Sweetness in Canned Fruits and Vegetables. Fruit & Veg. Presser. Res. Stat., Campden, Ann. Rep. 1940, p. 16. *In* Chem. Abstr. 36: 5784, 1942.

(2) RICHARDS, R. K., TAYLOR, J. D., O'BRIEN, J. L., AND DUESCHER, H. O.: Studies on cyclamate sodium (Sucaryl sodium), a new noncaloric sweetening agent. J. Am. Pharm. A. (Scient. ed.) 40: 1, 1951.

(3) SERGER, H.: Artificial sweetening (saccharin) and its use in the fruit preservation industry. Chem.-Ztg. 47: 98, 123, 145, 1923. *In* Chem. Abstr. 17: 3383, 1923.

(4) TRAEGEL, A.: Sugar and saccharin. Deutsche Zuckerind. 50: 1175, 1925. *In* Chem. Abstr. 20: 246, 1926.

(5) WEAST, C. A.: Dietary frozen fruit and method of making the same. U. S. Patent No. 2, 511, 609 (June 13, 1950).

(6) WEAST, C. A.: Dietetic canned fruits and methods of making the same. U. S. Patent No. 2, 536, 970 (January 2, 1951).

(7) ANDERSON, E. E., ESSELEN, W. B., AND FELLERS, C. R.: Noncaloric sweeteners in canned fruits. J. Am. Dietet. A. 29: 770, 1953.

(8) TAYLOR, J. D., RICHARDS, R. K., AND DAVIN, J. C.: Excretion and distribution of radioactive S^{35}-

cyclamate sodium (Sucaryl sodium) in animals. Proc. Soc. Exper. Biol. & Med. 78: 530, 1951.

(9) Schoenberger, J. A., Rix, D. M., Sakamoto, A., Taylor, J. D., and Kark, R. M.: Metabolic effects, toxicity, and excretion of calcium N-cyclohexylsulfamate (Sucaryl) in man. Am. J. M. Sc. 225: 551, 1953.

(10) Fitzhugh, O. G., Nelson, A. A., and Frawley, J. P.: A comparison of chronic toxicities of synthetic sweetening agents. J. Am. Pharm. A. (Scient. ed.) 40: 583, 1951.

(11) Council on Pharmacy and Chemistry: New and non-official remedies: cyclamate calcium. J. A. M. A. 148 (2): 744, 1952.

(12) Sheffield, F. D., and Roby, T. B.: Reward value of a non-nutritive sweet taste. J. Comp. & Physiol. Psychol. 43: 471, 1950.

(13) Hausmann, M. F.: The behavior of albino rats in choosing foods. 2. Differentiation between sugar and saccharin. J. Comp. Psychol. 15: 419, 1933.

(14) Mayer, J.: Personal communication.

(15) Bowser, L. J., Trulson, M. F., Bowling, R. C., and Stare, F. J. Methods of reducing. Group therapy vs. individual clinic interview. J. Am. Dietet. A. 29: 1193, 1953.

(16) McCann, M. B., and Trulson, M. F.: Long-term effect of weight reduction programs. J. Am. Dietet. A. 31: 1108, 1955.

Nutritional Study of Oklahoma's Kiowa Indians

Because little is known about the nutritional status of the Indian population in Oklahoma, even though it is large, an investigation during the summer of 1951 was carried on among the Kiowa Indians at Carnegie, Oklahoma. Nutritionists Florine P. Bettis and Helen B. Burton of the University of Oklahoma, Norman, worked with the U. S. Indian Service and the state Department of Health, in obtaining 24-hr. dietary histories. The investigation also included medical and biochemical tests.

After gaining consent of the tribal leaders, about 30 families or 81 people, ranging in age from five to seventy-eight, became the subjects of the study. Two 24-hr. dietary histories were taken during the course of the study.

Food intake was classified according to eight food groups: meat, fish, and poultry; milk; eggs; fruits (including citrus and good ascorbic acid sources and other fruits); vegetables (green or yellow, potatoes, legumes, and others); cereals (whole grain or enriched as well as refined); fats (butter, fortified margarine, and so on); and bread.

Dietary histories were scored accordingly, with the average for the two days' histories being used as the final score. Evaluation of the dietaries was done by an arbitrary point system, divided into "adequate," "borderline," and "deficient" ranges.

No family had a diet which scored in the "adequate" class, and only five were scored in the "borderline" category, leaving five-sixths with diets classified as "deficient."

Findings concerning food intake showed the greatest deficiency to be milk, followed by vegetables and fruits. Other deficiencies in descending order were: fats; meats, fish, and poultry; eggs; and cereals. No diet was deficient in bread. Twenty-nine of the thirty families had practically no milk, even though there were children in most of these families.

Only 10 per cent of the Indians showed no signs of deficiency diseases on physical examination. The majority had only mild symptoms, although there were some signs of moderate or even severe deficiencies. The most common difficulty involved the teeth.

Means for plasma protein for all ages fell within the range of 6 to 8 gm. per 100 ml., considered normal. Average hemoglobin levels for children, men, and women were below 12 gm. per 100 ml., the greatest discrepancy being with the adult women. Approximately 50 per cent of the Indians examined had values below the means ordinarily considered normal.

Plasma ascorbic acid figures averaged slightly above the minimum figure of 0.6 mg. per 100 ml. plasma considered normal. Pyruvic acid values were above normal ranging from 0.83 to 3.35 mg. with a mean of 1.65 mg. A figure above 1.30 mg. is said to be abnormally elevated and is often related to a thiamine deficiency. Although it is proper to suspect pathology whenever a basal pyruvic acid level exceeds 1.2 mg., such levels are not uncommon even in the absence of any metabolic disorders. Pyruvate figures should be compared with the blood glucose level before deciding that there is a pathologic condition. Other studies have shown pyruvic acid values to rise on a restricted thiamine intake.

Thus the lacks in the diet showed up in the results of the various biochemical tests.

Certain recommendations have been made as follows, to alleviate the conditions of the Indians as found in this study: (a) greater effort to be made to help these Indians to improve their dietary habits; (b) special emphasis to be placed on the importance of the "protective foods," (c) effort to be made to show these people how to use canned and dried milks, since few families had any means of refrigeration; (d) encouragement of the Indians to have vegetable gardens, raise chickens, and have their own cows; and (e) instruction to be provided in canning and preserving.—*Abstracted from: Bettis, F. P., and Burton, H. B.: A Nutritional Study of a Community of Kiowa Indians. The Sooner Dietitian 18: 1 (Oct.), 1955.*

Current Practices in Bread Enrichment

Nutritive Content of Enriched Bread[1]

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REFERENCE to the literature on the nutritive value of commercially produced enriched bread reveals little recent work along this line, although there are recent reports of research on the amount of calcium and milk (1–3). Modern commercial white bread differs nutritionally in important respects from that produced prior to 1941.

In May 1941, the National Nutritional Conference for Defense recommended that white flour and white bread be fortified with certain specified increments of thiamine, riboflavin, niacin, and iron with additions of calcium and vitamin D being optional. While this recommendation was widely accepted, enrichment was made compulsory by the Food Distribution Administration (later merged into War Food Administration) in its first order issued in December 1942. The suggested levels of enrichment were reviewed and specified in the order. This program became effective October 1, 1943 and expired October 24, 1946. Since that time enrichment has been continued both on a voluntary basis and as the result of state legislation (4). As of today, twenty-seven states require enrichment. These same levels were specified in the standards for enriched bread adopted by the Food and Drug Administration to be effective in 1952. The requirements are given in Table 1 (5).

The extent of enrichment since 1946 has been estimated in three surveys conducted by the Bureau of Agricultural Economics (6). The results indicate that the rate of enriching flour and bread continues at about the same level as under the wartime compulsory program, and that 80 per cent of the white bread commercially produced is enriched.

It seemed probable that modern bread would differ from the pre-war bread also in the proportions of sugar, shortening, and milk.

[1] Received for publication November 23, 1955.

This study was undertaken to determine the contents of the main nutritive factors in enriched bread, and to investigate the commercial enrichment practice, thus providing a basis for nutritive evaluation of this universally eaten food.

Experimental Procedures

A series of 255 samples of wrapped sliced enriched bread from 52 cities in 39 states of the United States and the District of Columbia were purchased on the open market during 1952, 1953, and 1954. Services of Western Union were used in procuring these samples, which were shipped to the Institute laboratories by Railway Express. According to declarations carried on the labels, all samples of this series were enriched.

When received, the samples were air-dried in the dark to minimize loss of riboflavin. The air-dried samples were then ground and analyzed for moisture, protein, fat, ash, iron, calcium, thiamine, riboflavin, niacin, and lactose.

Analytical methods of the Association of Official Agricultural Chemists (7) were used for the determination of moisture (vacuum oven method), ash, protein (Gunning modification), iron (phenanthroline colorimetric method), calcium (volumetric permanganate method), and fat (acid hydrolysis method). Vitamins were determined by chemical assays (8): riboflavin and thiamine photofluorometrically, and niacin by the cyanogen bromide method using p-methylaminophenol sulphate (Metol) as coupling reagent. Lactose was estimated by Munsey's (9) method, and lactose values were converted to nonfat dry milk solids through the use of the proper factor. By employing the fact that 65 per cent of the bread weight represents the amount of flour used in average commercial formulas, the parts by weight of nonfat dry milk solids based on 100 parts by weight of flour employed in the bread formula were calculated. All results have been calculated on a 38 per cent moisture basis in order that individual data may be compared directly.

TABLE 1

Average analysis of samples of bread

COMPONENT	SAMPLES ANALYZED	AVERAGE ON 38% MOISTURE BASIS	AVERAGE ON AS-RECEIVED BASIS	ENRICHMENT STANDARDS OF FDA	
				Minimum	Maximum
Moisture (%)	60	—	35.13	—	—
Protein (f-5.7) (%)	255	8.21	8.59	—	—
Ash (%)	253	1.90	1.99	—	—
Iron (mg./lb.)	250	10.96	11.47	8.0	12.5
Calcium (mg./lb.)	250	397.1	415.4	300*	800*
Thiamine (mg./lb.)	254	1.15	1.20	1.1	1.8
Riboflavin (mg./lb.)	238	0.81	0.85	0.7	1.6
Niacin (mg./lb.)	234	10.56	11.02	10.0	15.0
Vitamin D (U.S.P. units)	—	—	—	150*	750*
Milk solids (%)	241	2.59	2.71	—	—
Fat (acid hydrolysis) (%)	255	3.19	3.34	—	—

* Optional ingredient.

Results and Discussion

The results of individual analyses[2] were averaged, and the average values are given in Table 1.

The average moisture value shows no significant variation from the value 35.3 per cent given in the first study of American foods reported in 1906 (10). Later reports have indicated that bread is produced at an unchanged moisture level: Chatfield and Adams (11) found 35.9 per cent; Watt and Merrill (12), 34.7 per cent; Goddard and Marshall (3), 36 per cent moisture in fresh breads.

Protein content follows a similar pattern as evident from these results: Atwater and Bryant (10) found 9.2 per cent (N × 6.25) protein in bread; Bridges (13), 9.6 per cent (N × 6.25); and Chatfield and Adams (11), 8.5 per cent. However, a larger proportion of the protein is now derived from milk due to higher use of this ingredient in bakery formulas. The variation of protein in the analyzed samples was as follows: 80.4 per cent of the samples contained 7.5 to 8.5 per cent protein; 0.8 per cent of them, less than this amount; 17.3 per cent were in the range 8.5 to 9.0 per cent; 1.2 per cent were between 9.0 to 9.5 per cent; and one sample contained 9.64 per cent protein.

Comparison of our results with early reports indicates that the mineral content of bread has increased. Atwater and Bryant (10) found 1.1 per cent ash, while Chatfield and Adams (11) found 1.3 per cent. Our study showed an average 2.0 per cent. This difference is accounted for by present use of higher proportions of yeast food, milk solids, and optional enrichment with calcium. Ash content ranged from 1.4 to 2.4 per cent. It varied in 1.2 per cent of the samples from 1.4 to 1.6 per cent; in 23.7 per cent, from 1.6 to 1.8 per cent; in 71.5 per cent, from 1.8 to 2.2 per cent; and in 3.6 per cent, from 2.2 to 2.4 per cent.

Iron in bread was increased by the enrichment program. Values reported prior to 1941 for white bread varied from 3.22 to 4.95 mg. per pound. Rose (14) estimated 3.83 mg. per pound; Sherman (15), 4.05; Leichsenring and Flor (16), 3.22; Toscani and Reznikoff (17), 5.72; Bridges (13), 4.5; and Hoffman *et al.* (18), 4.95. The reported results were, as a rule, on a fresh bread basis. The average value found in this study falls approximately in the middle of the range required by the federal bread standards. Of the samples studied, 79.4 per cent were in this range, while 1.5 per cent fell into the range 7.0 to 8.0 mg. per pound, and 3.2 per cent were below 7.0 mg. per pound. Only 6.4 per cent of the samples were in the range 12.5 to 13.5 mg. per pound, and 9.5 per cent were above 13.5 mg., the highest value being 15.9 mg. per pound.

Several reports on calcium in bread are available. Prouty and Cathcart (19) published results of a survey of 39 loaves of white bread from 33 bakeries in 27 states and found the average calcium content to be 0.080 per cent, or 363 mg. per pound of bread of 38 per cent moisture. Comparing values from previous studies, they detected an upward trend in the use of milk and other ingredients containing calcium. Crespo and Bradley (2) analyzed 135 loaves of enriched and white bread from 24 cities, 23 samples of whole wheat bread from 23 cities, and 12 samples of wheat bread from 12 cities purchased during the winter of 1949–1950. They found 404 mg. per pound in white bread at 38 per cent moisture level. Goddard and Marshall (3) studied 402 samples of white bread collected in 41 states and the District of Columbia and found 334 mg. as the mean value in fresh pound-loaf of bread. Our results tend to substantiate the finding that white bread has become a better source of calcium than indicated in some tables of nutritive values. Of our analyzed samples, 1.2 per cent contained less than 200 mg. calcium per pound; 14.4 per cent were in the range 200 to 300 mg.; 80.8 per cent were in the range 300 to 600 mg; and 3.6 per cent above this level.

The presence of thiamine in bread was indicated in Bridges' tables (13). Morgan and Frederick (20) found that fresh white bread contained 30 I.U. (= 0.45 mg. per pound); Williams and Spies (21) gave a value 0.23 mg. per pound; Schultz, Atkin, and Frey (22), 0.32–0.46 mg. per pound; Lane, Johnson, and Williams (23), 0.21 mg. per pound; Sarett *et al.* (24) for unenriched bread 0.22 mg. per pound, and 1.07 mg. for enriched bread; Melnick *et al.* (25), 0.38 mg. per pound for white unenriched bread. The average value found in this survey is slightly more than the minimum of the federal standards for enrichment with thiamine. The majority of the samples showed close adherence to this

[2] Complete analytical tables are available on request from the American Institute of Baking.

figure. Of the samples analyzed, 75.5 per cent were in the range 1.1 to 1.8 mg. per pound; 14.0 per cent contained 1.0 mg.; 5.4 per cent, 0.9 mg.; 0.4 per cent, 0.8 mg.; 0.8 per cent, 0.7 mg.; and 3.9 per cent contained less than 0.7 mg. per pound.

Bridges (13) indicated the presence of riboflavin in bread. Sarett *et al.* (24) reported 0.24 mg. per pound in unenriched bread and 0.83 mg. in enriched bread, and Cheldelin and Williams (26), 0.41 mg. per pound. The values for riboflavin in this study show a pattern similar to that for thiamine. The average riboflavin was found to be above the enrichment minimum. Of the samples analyzed, 93.0 per cent were in the range 0.7 to 1.6 mg. per pound; 3.7 per cent contained 0.6 mg.; 0.4 per cent, 0.5 mg.; and 2.9 per cent contained less than 0.5 mg. per pound.

Thomas, Bina, and Brown (27) found 1.92 to 2.42 mg. niacin per pound in unenriched bread and 8.50 to 9.96 mg. in enriched breads. Sarett *et al.* (24) reported 12.55 mg. per pound in enriched bread. Teply, Strong, and Elvehjem (28) reported 2.95 to 4.28 mg. in unenriched breads, 6.8 mg. in enriched bread, and 4.14 mg. in "milk bread." The average niacin content in our samples was somewhat above the required minimum, its distribution being as follows: 75.7 per cent of the samples were in the range 10.0 to 15.0 mg. per pound; 14.0 per cent contained 9.0 to 10.0 mg.; 6.0 per cent, 8.0 to 9.0 mg.; 1.3 per cent, 7.0 to 8.0 mg.; and 3.0 per cent, less than 7.0 mg. per pound.

Fat content in bread was significantly higher than given in the early studies. Atwater and Bryant (10) reported 1.3 per cent; Bridges (13), 1.4 per cent; Chatfield and Adams (11), 2.0 per cent. In the present study, 5.1 per cent of the samples contained 2.0 to 2.5 per cent fat; 70.6 per cent were in the range 2.5 to 3.5 per cent; 19.2 were between 3.5 to 4.5 per cent. Only 3.5 per cent of the samples contained more than 4.5 per cent fat and 1.6 per cent less than 2.0 per cent.

Calcium content has been used as an index of milk in the formula (19). This relationship is no longer valid in view of the general use of other calcium-containing ingredients. Crespo and Bradley (2), using lactose as an index of milk, found 3.8 per cent of nonfat dry milk solids per 100 parts of flour by the same method. Cook and Halvorson (1), using a questionnaire survey, concluded that the proportion of milk to flour used by commercial bakers of bread in 1948 equaled that used in 1939 and was somewhat in excess of 4 parts of milk for every 100 parts of flour. The majority of bread samples contained 2.0 to 3.5 per cent of nonfat dry milk solids which corresponds to an addition of approximately 3.0 to 5.5 parts of this ingredient per 100 parts of flour. The distribution of milk levels was: 1.2 per cent of the samples contained less than 1.0 per cent of nonfat dry milk solids; 16.2 per cent ranged between 1.0 to 2.0 per cent; 75.1 per cent of the breads were between 2.0 to 3.5 per cent; and 7.5 per cent were above these levels.

Summary

Two hundred fifty-five samples of wrapped, sliced white bread, labelled as enriched, were analyzed for thiamine, riboflavin, niacin, calcium, and iron as well as moisture, ash, protein, and lactose (as an indication of milk content). Our average results for enrichment factors exceeded the minimum levels required by federal standards and those currently used in food value tables by following proportions: thiamine by 8 per cent, riboflavin by 19 per cent, niacin by 11 per cent, and iron by 13 per cent. This surplus reflects the effort to assure compliance with federal requirements. Milk content was estimated to be 3.9 lb. nonfat dry milk solids for each 100 lb. flour. Average calcium content was found to be 415 mg. per pound of fresh bread. Values for all other factors corresponded closely to those generally accepted. Comparison of these results with those of studies made prior to 1941 indicate a significant increase in use of fat and milk solids, as well as greatly increased vitamin and iron content of white bread.

REFERENCES

(1) Cook, H. L., and Halvorson, H.: Industrial uses and preferences for nonfat dry milk solids. Univ. Wisc. Agric. Exper. Sta. Bull. No. 169, 1950, p. 47.
(2) Crespo, S., and Bradley, W. B.: Calcium content of commercial bread. Food Res. 16: 320, 1951.
(3) Goddard, V. R., and Marshall, M. W.: The calcium content of commercial white bread. U.S.D.A. Tech. Bull. No. 1055, 1952.
(4) Williams, R. R.: Food enrichment: progress and controversial issues. J. Agric. & Food Chem. 2: 770, 1954.
(5) Bakery products; definitions and standards of identity. Fed. Register 17: 4462 (74), May 15, 1952.
(6) Bur. Agric. Econ., U.S.D.A.: Cereal food enrichment in the U. S. Natl. Food Situation NFS 49: 16 (July-Sept.), 1949; NFS 54: 34 (Oct-Dec.), 1950; NFS 69: 17 (Aug. 2), 1954.
(7) Assn. Official Agricultural Chemists: Official Methods of Analysis. 7th ed. Washington: Assn. Off. Agric. Chemists, 1950.
(8) Assn. of Vitamin Chemists, Inc.: Methods of Vitamin Assay. 2nd ed. N. Y.: Interscience Publ., 1951.
(9) Munsey, V. E.: Report on lactose in bread. J. Assn. Off. Agric. Chemists 35: 697, 1952.
(10) Atwater, W. O., and Bryant, A. P.: The Chemical Composition of American Food Materials, Rev. ed. U.S.D.A. Off. Exper. Sta. Bull. No. 28, 1906.
(11) Chatfield, C., and Adams, G.: Proximate Composition of American Food Materials. U.S.D.A. Circ. No. 549, 1940.
(12) Watt, B. K., and Merrill, A. L.: Composition of Foods—Raw. Processed, Prepared. U.S.D.A. Agriculture Handbook No. 8, 1950.
(13) Bridges, M. A.: Food and Beverage Analyses. Philadelphia: Lee and Febiger, 1935.
(14) Rose, M. S.: A Laboratory Handbook for Dietetics. 3rd ed. N. Y.: Macmillan Co., 1929.

(15) Sherman, H. C.: Chemistry of Food and Nutrition. 4th ed. N. Y.: Macmillan Co., 1932.
(16) Leichsenring, J. M., and Flor, I. H.: The iron requirement of the pre-school child. J. Nutrition 5: 141, 1932.
(17) Toscani, V., and Reznikoff, P.: The iron content of foods used in a municipal hospital. J. Nutrition 7: 79, 1934.
(18) Hoffman, C., Schweitzer, T. F., and Dalby, G.: Iron content of bread and bread ingredients. Indust. & Engin. Chem., Anal. Ed. 12: 454, 1940.
(19) Prouty, W. W., and Cathcart, W. H.: The calcium content of white bread. J. Nutrition 18: 217, 1939.
(20) Morgan, A. F., and Frederick, H.: Vitamin B (B_1) in bread as affected by baking. Cereal Chem. 12: 390, 1935.
(21) Williams, R. R., and Spies, T. D.: Vitamin B_1 and Its Uses in Medicine. N. Y.: Macmillan Co., 1938.
(22) Schultz, A. S., Atkin, L., and Frey, C. N.: Vitamin B_1 content of wheat, flour and bread. Cereal Chem. 16: 643, 1939.
(23) Lane, R. L., Johnson, E., and Williams, R. R.: Studies of the average American diet. 1. Thiamine content. J. Nutrition 23: 613, 1942.
(24) Sarett, H. P., Bennett, M. J., Riggs, T. R., and Cheldelin, V. H.: Thiamine, riboflavin, nicotinic acid, pantothenic acid and ascorbic acid content of restaurant foods. J. Nutrition 31: 755, 1946.
(25) Melnick, D., Mabardie, A., Bernstein, A., and Oser, B. L.: The fate of vitamin B_1 in the production of baked goods. Am. Baker 9: 76 (Oct.), 1941.
(26) Cheldelin, V. H., and Williams, R. R.: Studies of the average American diet. 2. Riboflavin, nicotinic acid and pantothenic acid content. J. Nutrition 26: 417, 1943.
(27) Thomas, J. M., Bina, A. F., and Brown, E. B.: The nicotinic acid content of cereal products. Cereal Chem. 19: 173, 1942.
(28) Teply, L. J., Strong, F. M., and Elvehjem, C. A.: The distribution of nicotinic acid in foods. J. Nutrition 23: 417, 1941.

Iron Absorption

Radioactive iron has been incorporated into various foods and absorption measured under a variety of conditions. Radioactive iron has been injected into hens so that their eggs would contain the isotope. After several weeks, the hens have been killed so their livers and muscles might also be fed. Vegetables have been grown in nutrient solutions to which radioiron was added; they then had a portion of their iron in isotopic form. Foods have been cooked or prepared as they would be in a normal American diet and fed to fasting subjects. In most experiments, the radioiron incorporated into circulating hemoglobin has been used as the measure of the quantity absorbed, but in some instances, the unabsorbed portion recovered in the feces has also been determined.

With few exceptions, the iron absorbed from foods by normal subjects has been 10 per cent or less. In only two instances was absorption significantly greater. In the few studies so far completed with chicken liver, vegetables, and yeast, however, iron-deficient patients retained more than 10 per cent in the majority of instances.

The effect of other foods on iron absorption has also been measured. The eggs were baked into cake or corn bread, or scrambled and fed with toast, bacon, cereal, and fruit juice. Greater assimilation could be detected only with relatively large amounts (200 to 250 cc.) of citrus fruit juices, suggesting that the ascorbic acid might increase absorption by promoting the reduction of ferric iron in food to the ferrous form. Crystalline ascorbic acid had a similar effect. Also: (a) ascorbic acid usually increased the assimilation of food iron even more in iron-deficient than in normal subjects; (b) reducing substances, such as cysteine, had a similar action; and (c) other organic acids (citric, lactic, tartaric) were without effect.

A preliminary attempt has also been made to evaluate the importance of gastric hydrochloric acid on iron absorption. In persons with hypochlorhydria or achlorhydria, assimilation of food iron is probably poor. In such patients, however, we have not been able to increase absorption by adding hydrochloric acid to cooked eggs. On the other hand, ascorbic acid in doses of 250 to 1000 mg. did increase absorption very significantly, even though it had comparatively little effect on gastric acidity.

Iron absorption from breads baked with flour which had been enriched with the four radioactive iron preparations used most commonly in the flour and bread enrichment program were also studied.

The amount absorbed by twenty-eight or thirty-two healthy young men and women varied from 1 to 12 per cent. The remaining four subjects retained from 26 to 38 per cent, but there was reason to suspect that their iron stores were low. The three patients with iron deficiency anemia assimilated 45 to 64 per cent of the iron intake. The addition of 1 gm. ascorbic acid to the bread eaten by six healthy subjects increased absorption two to three times.

The diet of adults in the U. S. contains approximately 12 to 15 mg. iron daily. The amount absorbed from food per day, therefore, probably varies from 0.6 to 1.5 mg. Poor diet, infection, diarrhea, or steatorrhea would decrease this amount even further, while iron deficiency would probably result in some increase.—*Abstracted from a paper delivered at the 38th Annual Meeting of The American Dietetic Association in St. Louis, on October 18, 1955 by Carl V. Moore, Reubenia Dubach, and Ruth Steinkamp, Washington University, St. Louis.*

Dr. Lillian Storms Coover

December 22, 1885–February 27, 1956

All members of The American Dietetic Association share the deep sense of loss in the death of Lillian Storms Coover. She was known to all the membership because of her twenty-eight years of service in state associations (Washington, D. C. 1928–29, Michigan 1930–45, Iowa 1945–56) and the many national offices she held.

A.D.A. is what it is today because of the fine women who make up its membership and the caliber of leadership which it has had since its founding in 1917. Lillian Storms Coover faithfully served the Association and gave it strong leadership. She was particularly interested in the behind-the-scenes work. The reorganization of the Association a few years ago with the formation of the Coordinating Cabinet, the constitution, membership standards, financial status, and the organization of the headquarters office were problems to which she devoted many hours. The last letter she wrote a friend three days before her death carried these words, "working this morning on a membership application for A.D.A., which was sent me for further information."

Lillian loved life and lived it to the fullest—full of professional interests and service to her community, church, and home. She gave of herself but was always eager to learn and do new things. On Monday morning, February 27, she set out with a companion to drive to Tuscaloosa to enjoy the coming of spring in all its beauty of soft greens and rich colors of azaleas, camellias, daffodils, hyacinths, forsythia, pear trees, and flowering peach, which were just coming into full bloom in the South. She was killed in an automobile collision in Missouri that afternoon.

Lillian Coover was President of The American Dietetic Association during 1950–51. In 1954 she received the highest award which our Association gives, the Marjorie Hulsizer Copher Award, "in recognition of her devoted service to The American Dietetic Association and her contribution to its organization, professional advancement, and formulation of its Code of Ethics. Her achievements as teacher, research worker and nutrition consultant; her charm and grace of personality; her concern for the success of others; and her breadth of interest, clear thinking and high professional standards will continue to be an inspiration and stimulus to all in the field of dietetics."

Through the years Lillian had served in the Michigan Dietetic Association as President, Treasurer, and Delegate, and in the national Association tion as Secretary, Vice President, Chairman of House of Delegates, President, and as chairman or member of the following committees: Membership, Nominating, Reorganization and Constitution, Civil Defense, Investigation Board, and History of A.D.A.

Chase News Photo

Dr. Lillian Storms Coover

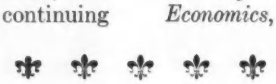
Lillian was born in Tipton, Michigan, December 22, 1885. Her father was a Methodist minister and later became President of Iowa State College and then Baldwin-Wallace College in Berea, Ohio. Her mother, Lovie Whitcomb Storms, had been a teacher, so it is easy to see how Lillian came by her love of education, her spirit of service, and her liking for people. She obtained her B.S. degree in chemistry at Iowa State College; M.S. from Teachers College, Columbia University, where she studied with Mary Swartz Rose; and her Ph.D. from Columbia University under Dr. Henry C. Sherman in 1924. That year she set off for New Zealand where she stayed till 1927 as Assistant Professor of Home Science at the University of Otago in Dunedin. There, she taught nutrition to undergraduates, and initiated nutrition research and the first graduate work in nutrition. Her students loved her because she was so interested in everything, had such a sense of humor and spoke with "such a strange accent" (Americans were a rarity in New Zealand in those days), but most of all because she was so enthusiastic about nutrition, and inspired some of her students to want to come to America for advanced study. She saw more of New Zealand than many New Zealanders do and crossed one of the highest mountain passes never before reached by a woman. Australia and Java were also on her travel list and on

her return to U. S. A. she took the long way home so that she could visit India, Egypt, the Adriatic coast, and Italy.

In 1930 she joined the Gerber Products Company of Fremont, Michigan, as home economist. This company was just starting the production of strained vegetables for infant feeding; the newness of the field and the challenge of such an opportunity for research and application of nutritional knowledge appealed to Lillian. She served as nutritionist and director of research for Gerber Products Company for fifteen years and from 1945 on, she continued as Consultant for the Research Committee of Gerber Products Company.

In 1945 Lillian Storms was married to Winfred Coover, then head of the Department of Chemistry at Iowa State College; she made her home in Ames where her home and garden gave her so much pleasure and here she loved to entertain her friends. She fully demonstrated her skill in combining successful homemaking with community service, and gave much time to her church as well as continuing her professional interests in A.D.A. She always had the courage and vision to strike out on new pathways and the last seven years of her life called for all of her courage as she battled with that crippling and painful disease, arthritis. As her physician said, where the average person in her condition would have been bedridden, Lillian kept going on with her civic and professional life and, until the last year or two, because of her ready smile, her keen interest in other people, and her enthusiasm for whatever she was doing, she managed to conceal from others the pain and handicaps of the disease.

Lillian Storms Coover truly carried on the traditions of the founders of The American Dietetic Association. She was an active A.D.A. member and office holder; Chairman Home Economics in Business Section of A.H.E.A. 1935–36; teacher, research worker, homemaker and nutritionist; and a member of Sigma Xi, Iota Sigma Pi, Sigma Delta Epsilon, Pi Beta Phi sorority, and P.E.O. Sisterhood.—*E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa.*



Excerpts from the History of the Minnesota Dietitians 1910–1925

Dietitians were on the staffs of fifteen Minnesota hospitals in the years 1910 to 1918. They had opened paths into the well guarded hospital arenas. However, there were few avenues of communication, and no professional associations to bring these dietitians together.

World War I precipitated a call for dietitians. Food conservation was urgent. The National Food Administration lead with a teaching program on how food could be conserved. This resulted in the appointment of committees, of which the group concerned with institutions, both public and private, was one.

The force of the Red Cross drive was also carrying weight. Professionally trained women were active as instructors and directors, went into service as Red Cross Army dietitians, or began courses for student dietitians in the teaching hospitals. In Minnesota, two instructors were qualified to teach local classes—and three became Army dietitians.

The University of Minnesota Hospital opened a course for student dietitians in 1917 and enrolled three students—Winifred Howard (Erickson), Charlotte Chatfield, and Kathryn McHenry, all of whom have become distinguished women in the profession. Mrs. Erickson has been active not only in professional circles in Minnesota but has held the office of Treasurer and, this year, President of The American Dietetic Association. Dr. Chatfield, noted for her work on food analysis with the U.S. Department of Agriculture, is now on the staff of the Food and Agriculture Organization in Rome; and Miss McHenry, after serving as an Army dietitian and later organizing the dietetic internship at the Hines, Illinois VA Hospital, is now Area Dietetic Representative of the VA Regional Office in Washington.

The pressure of the times brought an appreciation of the need for dietitians, and The American Dietetic Association was formed in October 1917 in Cleveland. Minnesota kept pace, and in January 1918 the Minnesota State Dietetic Association was organized, with Gertrude I. Thomas as president. We believe that this was the first state dietetic association, and in 1925 we affiliated with The American Dietetic Association.

Meetings of the Minnesota Dietetic Association were held frequently, usually monthly, and drew speakers not only from Minneapolis and St. Paul, but also Rochester. By 1925 the Association had 34 active and 14 associate members.—*Abstracted from "The Dietitian in Minnesota from 1910 to 1925" by Gertrude I. Thomas, University of Minnesota, Minneapolis.*

Current Comment

Educational Standards for Student Nurses in the Dietary Department[1]

M. ANNIE LEITCH, R.N.

Associate Executive Secretary,
American Nurses' Association, New York City

THE history of the licensure of the professions is a most interesting one. The first law governing the practice of nursing in the United States was passed in North Carolina in 1903. By 1920, all states but one had such a law, and by 1923, all states had laws. The state boards of nursing, as all other professional boards, are appointed for the express purpose of seeing that the intent of the law as enacted is carried out. In order that such a board may know that the particular nurse has received instruction and practice in the knowledge and skills in nursing, it is essential that the board know the quality of instruction in the school from which she has been graduated. Thus, to the state board falls the responsibility of approving programs in schools of nursing. This includes setting standards for the teaching of nutrition and related subjects and approving courses designed by the school faculty to meet these standards.

Early Nursing Practice

In the early days of the century, when the practice of medicine was still in the horse and buggy stage, the practice of nursing was simple and uncomplicated. Bathing the patient and preventing bed sores occupied most of the nurse's time. The plan for the feeding of the patient fell almost entirely to the nurse, but diets were always simple and uncomplicated—eggnogs, gruels, and broth. The dietitian was yet unknown.

In recent decades the rapid advances in medical science have completely changed this picture. The practice of medicine has become extremely complicated, and today, in order to meet the nursing needs of the patient, the requirements for the safe practice of nursing must of necessity be broadened to include many new functions as well as other functions formerly considered within the scope of medicine. The legal definition of nursing, suggested by the Committee on Legislation of the American Nurses' Association now reads:

> The practice of professional nursing means the performance for compensation of any act in the observation, care and counsel of the ill, injured or infirm, or in the maintenance of health or prevention of illness of others, or in the supervision and teaching of other personnel, or the administration of medications and treatments as prescribed by a licensed physician or dentist; requiring substantial specialized judgment and skill and based on knowledge and application of the principles of biological, physical, and social science. The foregoing shall not be deemed to include acts of diagnosis or prescription of therapeutic or corrective measures.

This definition would seem to be a far cry from the day when the nurse's service to the patient was limited to bed, bath, and broth.

In the early period what the nurse knew about food therapy was considered of small importance, since the doctor himself rarely possessed any scientific understanding of the subject. As knowledge of nutrition grew, it was soon apparent that neither doctor nor nurse could master all the new research and at the same time continue to be experts in their respective fields. Thus the responsibility for the patient's nutrition was gladly passed to the newly learned and highly competent dietitian. But progress did not stand still. More and more knowledge has been gained about nutrition and its effect on growth and development in health and disease. Consequently, the nurse now finds herself expected to understand a wide range of diets and be qualified to assist in the teaching of the patient and his family in relation to diabetes, obesity, and many other disease conditions as well as the normal nutrition of children and the special needs of the aged.

Teaching the Nurse to Interpret

It is at this point that the responsibility of the state board of nursing comes into focus. What constitutes the safe practice of nursing in relation to knowledge and understanding of dietary needs in health and disease?

In the time currently given to courses in nursing, the nurse can never hope to acquire the scientific background of the medical man or the dietitian. Instead, her function would seem to be that of a worker who comes face to face with the patient over longer periods of time and so has the greatest opportunity of understanding his attitudes and anxieties. To her must fall the task of interpreting the doctor's order for diet and the dietitian's plan for carrying out that order. To accomplish this task, it would seem that she must have a thorough knowledge of the basic principles of nutrition in health and disease.

[1] Presented at the 38th Annual Meeting of The American Dietetic Association in St. Louis, on October 21, 1955.

She must also acquire an understanding of the cause and the course of various diseases and of the objectives to be achieved through dietary control, decided on after full scientific exploration and diagnosis by the physician and worked out in detail by the dietitian.

How is such a *co-ordinator* to be prepared for her job? Since her work of interpretation must be done with parents of sick and well children and with the relatives of declining elderly people, as well as with patients suffering from serious physical diseases and with complicating emotional disorders, it is apparent that the nurse should possess more than knowledge. She must have a full understanding of her patient's needs and his physiologic, psychologic, and sociologic backgrounds. She must be proficient in the use of every modern guidance technique now practiced by educators, social workers, and other counselors. There is not space to permit discussion of this essential attribute of the nurse or of how it is to be acquired; nevertheless, her qualifications along such lines must be assumed in any discussion of what is expected of her in her work with the patient.

The ever-increasing scientific knowledge in relation to diet has stimulated great interest on the part of the public which is being catered to in both desirable and undesirable ways through national advertising, the radio, and television. The modern nurse must be very sure of what she knows in order to give intelligent guidance to the patient and his family who may have already accepted doubtful or misleading information.

State boards of nursing are keenly interested in seeing that all students in nursing receive adequate preparation in this important area. For many years, the general plan seems to have been a specified number of days or weeks of practice in the diet kitchen, where the student was given assignments in the preparation of various therapeutic diets. The actual content of the course tended to center on whatever special diets were available in the hospital where the experience was given. Too often the student who prepared the diets had little chance to know the patient for whom the diets were prepared. Also, the course frequently was taught as an entirely separate subject with little correlation with her study of general nursing.

The New Integrated Curriculums

At present, many schools of nursing, with the approval of state boards of nursing, are working out their own plans for a more patient-centered learning experience in nutrition. The dietitian responsible for teaching is a member of the faculty and is responsible for her share in curriculum planning. The subject matter of theory and practice is worked out as a joint project of the entire faculty, in keeping with total objectives and content of the curriculum. Such arrangements are watched closely by the state board visitor who is ever alert to give assistance when requested or indicated. Many fine programs have been set up with the full cooperation of stage leagues, school faculties, and state boards.

It is interesting to report that during the last three or four years, the American Nurses' Association has had a committee which has demonstrated a marked interest in such curriculum development, the Subcommittee on the Preparation of Educational Standards to Be Used as a Guide by State Boards. Progress reports have been prepared annually, but the full assignment has not yet been completed.

The phase of this work which I believe will be of most interest to dietitians is the recommendation that the state board of nursing in each state set up a general framework for the entire curriculum and within this fixed structure encourage the faculties of individual schools to develop their own curriculums to meet the stated objectives of their programs. To assist the schools in this task, the state league of nursing and the state board of nursing would be expected to work cooperatively by providing consultation and guidance. Our subcommittee has offered "for discussion only," the following broad areas. It is hoped and expected that state boards may invent different areas than those listed.

A. Contributing basic knowledge
   1. Area of scientific understanding (Time___)
   2. Area of human and cultural understanding (Time___)

B. Nursing practice
   1. Professional nursing practice core (Time___)
   2. Obstetric nursing or maternal and newborn nursing (Time___)

      Student learning experience should consist of instruction including educational laboratory practice given as a total unit of instruction. The student should develop:

      a. An understanding of the physiologic, nutritional, and psychologic needs of expectant mothers and how the nurse meets these needs.
      b. An understanding of the physiologic and pyschologic needs of the mother through labor and delivery and the supportive care given to her throughout this period by the nurse.
      c. An understanding of the physiologic, nutritional, and psychologic needs of the mother and child during the post-partal period and the day-by-day nursing care given to them.

      Throughout this unit of instruction there should be emphasis on parental education and the unity of the family.[2]
   3. Pediatric nursing or nursing of children (Time___)
   4. Medical nursing (Time___)
   5. Surgical nursing (Time___)
   6. Psychiatric nursing (Time___)

In setting up broad areas and describing a course such as that for obstetrical nursing which is detailed above, there would seem to remain little if any

[2] This description is presented only to be suggestive of the broad content indicated by this outline.

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place for such specific and inflexible requirements as a certain number of days of practice in the obstetrical department or in the diet kitchen, or a stated number of "scrubs" in the delivery room or special diets in the diet kitchen. Nutrition and the related subjects would seem, according to this outline, to be integrated throughout all areas.

What the Trends Really Are

In order to learn how far the trend towards the integration of courses in nutrition and diet therapy with other courses in the curriculum goes, information has been compiled showing the viewpoint of some of our state boards of nursing. Frieda Erhardt, Secretary, Arizona Board of Nursing, sent a questionnaire to all state boards of nursing in March 1955, and then shared her results with our committee. The following quotations are taken from the replies:

> "We are in sympathy with the current trend toward integration of this material and feel that adequacy on pretesting in nutrition could be employed to test basic understanding in the area and that the days of diet kitchen experience could well be apportioned in some other way that is more meaningful."
>
> "There has been some deviation from these requirements due to the trend towards integration of diet therapy with other subjects and to the tendency to eliminate a separate diet laboratory."
>
> "I feel quite sure that when we get to the point of putting new requirements into effect, there will be definite provision of modified experience obtained in the clinical experience, either as a substitute for or a supplement to diet kitchen experience itself."
>
> "Diet therapy practice may be integrated with nursing practice if the school can provide adequate supervision of such practice by a qualified instructor. No specific number of weeks of experience is required."
>
> "The Board has approved new type programs in which diet therapy is integrated with various clinical experiences and this work done chiefly on the wards, with patients; theory is included with class work in the various subjects."
>
> "Five years ago we recommended the integration of nutrition in all of the areas of nursing. For the past two years, all of our schools have been doing this type of teaching. We find it far more meaningful to the student, and the patient certainly receives better nutritional information."

One state describes alternate requirements for diet kitchen experience as follows:

> The following alternative requirements are presented for diet kitchen experience (for either plan, the experience shall be under the supervision of a dietitian who is a member of The American Dietetic Association):
>
> (1) Four weeks of diet kitchen experience. This clinical experience shall include a daily average of five varied therapeutic diets per student and shall provide experience in:
>
> (a) Planning the menus.
> (b) Preparing the trays.
> (c) Visiting patients when trays are served.
> (d) Consulting with individual patients concerning their diets.
> (e) Noting the likes and dislikes of the patients visited.
> (f) Helping patients to develop constructive attitudes toward their diets.
> (g) Studying the charts of the patients for whom she prepared diets.
>
> *or*
>
> (2) In lieu of the four weeks of diet kitchen experience described above, an integrated experience may be given, correlating nutrition with all clinical courses offered. In addition to the experience listed under (1), the following shall be included:
>
> (a) Determining and administering normal and therapeutic diets.
> (b) Writing dietary case studies of patients.
> (c) Interviewing patients regarding dietary problems.
> (d) Assisting patients to adapt the dietary regimen to their home situation.
> (e) Participating in ward clinics in relation to the total needs of the patients, with special emphasis on their dietary problems.

In September 1955, an even more detailed questionnaire was mailed by the American Nurses' Association. From the replies, it would seem that the state boards of nursing are accepting their responsibility to the public that the nurse who is permitted to practice has had adequate instruction and preparation in the area of nutrition and related subjects. They would seem, furthermore, to be approaching the whole problem with an "open mind" as to requirements for both content and method. Such an attitude opens to dietitians, whose stated purpose is "to improve the nutrition of human beings," a unique opportunity to work towards their objective, through sharing in the responsibility for educating the nurse for her place on the team of health workers.

Dietary Practice for the Student Nurse

SISTER M. ANNE DE PAUL, S.S.J.

Therapeutic Director
Our Lady of Victory Hospital
Lackawanna, New York

NURSING educators today, in endeavoring to prepare student nurses for constructive work in the field of health, realize that student experience must be centered around the complete care of the patient. Meeting nutritional needs is one phase in achieving optimal health or assisting diseased bodies back to health. As a member of the educational and therapeutic team, the dietetic instructor must, of course, follow the pattern of the nursing school

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faculty in order to integrate nutrition instruction into the other phases of the student nurses' learning experience.

At Our Lady of Victory Hospital, our educational program for student dietary experience attempts to achieve this. Our 200-bed hospital, which has a four-year collegiate nursing program with 40 to 50 students, incorporates dietary practice into the pattern of complete patient care.

Some specific goals of our program in nutrition are: to acquaint the student with the importance of diet to the well-being of the individual and to present reasons for the need of a good dietary history; to present methods of maintaining adequate nutrition in various physiologic conditions; to develop an understanding of each therapeutic diet as a modification of the normal diet; to recall psychologic disturbances which often accompany illness and affect attitudes toward food; to stress the importance of the patient understanding the reasons for a therapeutic diet; to present the material in such a way that the student can tell the patient what to eat in terms of food with sufficient flexibility that the regimen will be acceptable to the patient; and to acquaint the student with the hospital dietary department and to give her some understanding of the problems involved in hospital food service.

The diet therapy instructor is a full-time member of the nursing school faculty and a member of the curriculum planning committee. She is available as a resource person to all members of the hospital staff and also serves as a consultant in nutrition and diet therapy in all phases of nursing service. In addition, she supervises the Special Diet Therapy Department. She is an active member of dietetic associations and local nutrition committees.

Dietary Curriculum

Each nursing student in our hospital has a twenty-eight-day period in dietary practice, integrated into the curriculum during the period of medical and surgical classes. The student's week is divided as follows: two days of classes and two days off duty, leaving three days for clinical or ward experience. For their diet therapy practice, the students are rotated in groups of five and seven, with each student spending one week each on the medical, surgical, and pediatric wards and in the Special Diet Kitchen. The student reports for duty and works on the assigned ward the entire day, leaving the department only for special conferences which will be described later.

Patients assigned to the student are selected by the dietitian with the help of the head nurse and clinical instructor, who supervises the student's nursing care on the wards. The servicing of trays, feeding of patients, menu planning, and diet teaching are supervised by the dietitian. On the pediatric ward, the student is allowed to do some nursing care in line with the degree that her theory has been developed. The main purpose of the student's experience on pediatrics is to study children's diets for adequacy and to teach them and their parents the patient's nutritional needs.

In order to develop the aims listed above, the student's daily schedule on duty in the wards is carefully planned. Her patient assignment is made so that it will include therapeutic teaching. Time is usually allotted daily during visiting hours for teaching, so that members of the patient's family may also learn about dietary restrictions and special problems in menu planning. Meal times, during which the student serves and feeds patients and observes eating habits, are considered especially important periods in the day since it is at this time that the student has an opportunity to acquire material and the knowledge to participate in clinical conferences. Observation periods in the Special Diet Kitchen are also arranged so that she may see the actual preparation and serving of food. Time is also allotted for conferences held to discuss nutritional needs of the patients and to plan menus for therapeutic diets.

It is felt that it is particularly important for the student to serve and collect the patient's tray and to spend some time observing his eating habits. At meal time, teaching can be done informally, bringing out such points as the nutritional value of foods, substitutions for disliked foods, the need for eating slowly and chewing well, and the value of a pleasant environment while eating. In collecting trays, the student can check on how well the meal was eaten. In cases where food was left, she must learn why and determine how substitutions can be made to encourage the patient to eat.

Another part of the student's work with a patient involves the taking of a dietary history, which includes the patient's social, economic, and nutritional background; his height, weight, and possible diagnosis; medical, surgical, and dietary treatment; and food habits, likes, and dislikes. This dietary history will automatically bring to light such problems as lack of dentures, inability to feed oneself, national and cultural food customs, meal times at home, type and hours of work, and family income. With this information, a therapeutic diet, when prescribed, can be tailor-made to appeal to the individual patient.

To round out the student's concept of the complete nursing care of the patient, a conference is held each day with the dietitian for discussion of the nutritional needs of patients and the handling of special therapy. As the dietary intake is worked out, the physiologic conditions are discussed and studied. In this way, an understanding and knowledge of the importance of an adequate dietary intake is developed, as well as the structure and reasons for the therapeutic diet.

The clinical instructor also conducts a daily

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conference on the nursing care of a specific patient. The dietary student attends these conferences on her assigned ward, participating by contributing dietary information.

In addition to the ward periods spent in caring for patients, one week is allowed for work directly with the dietitian. During this time, the student becomes acquainted with the hospital dietary department, its location, duties, ward services, methods of requisitioning special orders, and special feedings—in general, the administration of the department and the nutrition teaching material which is available.

Evaluation of Students

In this program, the time element is short; however, the experience in diet therapy is designed to stimulate the student to develop and enlarge her knowledge in this area throughout the remaining medical and surgical periods.

In evaluating the actual diet therapy practice, the clinical instructor makes the first evaluation, since most of the student's time is spent in caring for patients. However, the dietitian and all other personnel concerned with the student's duties also keep records of progress. At the end of each week's service, the student, too, is asked to evaluate that week's work, both in regard to her own development and what she felt was lacking in her experience.

In this type of program, we have found that a keener interest on the part of the student in the patient's progress and dietary habits has been developed. Patients have also fared better. There is greater emphasis on teaching the patient, for the student has many opportunities for dietary discussions with the patient. Acutely ill patients, on intermittent and tube feeding, receive more accurate attention. And, on the pediatric ward, the program allows more time at meal periods to work on eating habits. Mothers can also be easily contacted at such times for discussions of good dietary habits.

The Dietary Department itself is better managed. The regular employees needed can be shifted around to meet student capacity, and the dietitian has greater opportunity for closer supervision of the student and more time for ward visits.

The emphasis on nutrition is not dropped at the end of the scheduled diet therapy experience. This school holds conferences once a week during the medical and surgical class year, at which time students in groups of six and ten discuss complete nursing care of a patient, which may include diet. As a consultant, the dietitian attends these conferences and supervises all material pertaining to nutrition and diet therapy which is handled by students at these conferences.

The tendency of the nursing staff today seems to be to concentrate on nursing procedures, forgetting nutrition and diet. Thus the responsibility for the teaching of nutrition and the servicing of diets reverts almost entirely to the dietitian and her aides. Whereas food is the dietitian's business, diet is also a treatment for the sick. Good, effective nursing education depends on team work—team work developed for the ultimate good of the patient. Dietitians, as members of the team, must enlarge their teaching abilities to fulfill their responsibilities in this area. Food is the only builder of body tissue, and dietitians need the aid of the nursing staff to teach the patients why food is needed for the body. They must also try to obtain the cooperation of the patients. Teaching can be done while a patient is hospitalized, in nutrition clinics, and in home visits by visiting nurses. Through integrating diet therapy experience in the nursing curriculum, our future graduate nurses will have a better understanding of nutrition and diet therapy in direct relation to the patient.

Student Nurses' Nutritional Education in Massachusetts[1]

KATHERINE B. TEEL[2] and
JESSIE C. GREENE

Harvard School of Public Health, Boston,
and *Boston University School of Nursing*

In an effort to learn more about trends, materials, and methods used by the teaching dietitians in Massachusetts, a questionnaire was sent by the Professional Education Section of the Massachusetts Dietetic Association to the schools of nursing approved by the Commonwealth of Massachusetts Approving Authority for Schools of Nursing. Fifty-five schools on the July 1, 1953, list of the Approving Authority were circularized with a response from twenty-eight, or slightly over 50 per cent. Since it is generally recognized that real problems do exist in regard to the presentation of nutritional material to student nurses, it was hoped that it would be possible to learn what the teaching dietitians themselves considered their most pressing problems. In addition, we hoped to obtain information on the number of students taught; textbook usage; and number of hours devoted to normal nutrition, foods and cookery, and diet therapy.

With the increasing concern about the value of a food preparation course in the nursing curriculum,

[1] Report of the Professional Education Section, Massachusetts Dietetic Association for 1954–55.

[2] Present address: Coronado, California.

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it seemed appropriate to determine trends in regard to pretesting of incoming student nurses to learn their ability to prepare basic foods. We were particularly interested in receiving responses to the idea of exempting from all laboratory work those students who successfully pass the pretest.

Judging from the good response to the questionnaire and from the number of written comments, these dietitians were quite critical in their evaluation of their programs and material.

As would be expected, the greatest number of the schools represented were three-year diploma programs, although several four- and five-year and one six-year program replied. All but two schools accepted only one class of students per year. The total enrollment in the schools represented ranged from 40 to 338 students.

The Teaching Staff

The returns of this questionnaire indicated that the responsibility for the nutritional instruction of the nursing students in twelve cases was that of a part-time instructor in dietetics employed by the hospital's dietary department. In one or two cases, these persons apparently had no other responsibility, but in the remainder their additional duties were therapeutic, administrative, or relief tasks. It is interesting to note that in seven instances the teaching dietitian for the nursing school was employed full time by the dietary department, while in four others she was employed by the nursing school. The remaining returns fell into the category of joint employment by the two departments.

Twenty returns said that the instructor in dietetics was either invited or required to attend the curriculum planning or faculty meetings of the school of nursing while the remaining were not. This would seem to be heartening evidence that in most instances there is a spirit of cooperation and support between the nursing school and the person responsible for the nutritional instruction.

Length of Courses and Texts

An area in which the questionnaire was designed to obtain fairly detailed information was that of formal classes in nutrition, cooking, and diet therapy, with numbers of hours and textbook usage specified. The number of hours of lectures in normal nutrition ranged from 15 to 46 hr. with the 46-hr. figure representing a 44-hr. nutrition course plus a 2-hr. pretest in cooking. Foods and cooking in most cases was a combined lecture and laboratory course of anywhere from 11 to 36 hr. The combined total number of hours in food and cooking and nutrition lectures ranged from 33 hr. in one case to 62 hr. in another, with fifteen responses reporting a 44- to 46-hr. course as the average.

Only two responses reported using separate texts for normal nutrition and diet therapy; twenty-two used Cooper, Barber, Mitchell, and Rynbergen's *Nutrition in Health and Disease* (1), but unfortunately did not indicate which edition. Other texts used included: Krause's *Nutrition and Diet Therapy in Relation to Nursing* (2); Proudfit and Robinson's *Nutrition and Diet Therapy* (3); and Johnson's *Modern Dietetics* (4). In one case Heseltine and Dow's *The Basic Cookbook* (5) and the Massachusetts Dietetic Association's *Guide for Planning Normal and Therapeutic Diets* (6) were used. One school did not report the use of any text.

Methods of Integration

In view of the trend toward, and the need for greater integration of nutrition course material with total patient care, we wished to find out the type of nutrition and diet therapy practice which is being given to nursing students. Twenty-three returns responded that practice in diet kitchen or on private pavilions for four to six weeks supervised by the therapeutic dietitians was their method, while five indicated that integrated practice on the various clinical services—again with the therapeutic dietitian supervising—was the type of practice provided. Since many more than five persons responded to the next question which had to do with the ways used to integrate nutrition and diet therapy in the clinical services, it would seem that perhaps this question was misinterpreted.

At any rate methods most frequently used in integrating and teaching nutrition included: individual patient teaching, modified diet writing, dietary histories, individual conferences, and records of dietary experience. Ward conferences, case studies, ward rounds, and group patient teaching were used by three or four of the dietitians. It is certainly generally recognized that methods of presentation need to be varied and the written comments of the respondents indicated that it was just such subjects as present courses, methods of teaching, points of emphasis, and apportionment of subject matter that bothered them.

Pretesting

Of particular interest were the replies having to do with pretesting incoming students to determine their ability to prepare basic foods. Two pretested and exempted from cookery and laboratory work those who successfully passed, but required all students to take the lecture course on normal nutrition. These two replies indicated that they felt the procedure advisable and that after proficiency in meal preparation had been ascertained, the time was used to study principles of nutrition. Two other dietitians are considering the plan for next year. One said that she pretests, but does not exempt students from laboratory work, while another pretested incoming students during one year and exempted them from cooking but did not continue the

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practice a second year. This person commented that an integrated course in foods and food buying, including a few laboratory periods, was substituted for the usual laboratory work but that it was not successful enough to be continued. She feels that although some students have cooking ability and experience, their procedures and application of principles of sanitation are often poor.

The remaining respondents said that they did not pretest. Comments about the omission of laboratory included the following: Ten dietitians made no comment about the omission of laboratory procedures; five indicated that they thought the plan would be interesting to try, that it might have possibilities, but that they favored either an incorporation of laboratory procedures into the time the student is in the diet kitchen, with emphasis on individual attention and teaching on the ward floors, or the development of the lecture-demonstration method with the instructor and student participating. The remaining ten responses generally expressed the opinion that laboratory procedures should be continued and that omission would be a great handicap to the nurse in her therapeutic diet work.

All but four of the replying schools had cooking laboratory facilities in which the dietitian taught the course; of these, three used public school laboratory facilities and the fourth a college facility. Thirteen responses indicated that they did not feel the laboratory facilities in use were adequate. The number of students per laboratory session was from ten to twenty with the majority having approximately fifteen students per laboratory.

Problems

All but three of the twenty-eight replies which we received expressed opinions and ideas on what they considered to be problem areas in the teaching of student nurses. There was general agreement that a pressing problem was the lack of time for individual teaching in the diet kitchen experience and for reviewing essential material in other areas of nutritional teaching. The frequency of interruptions for classes and clinics in other programs was considered to be a problem by one teacher. The area mentioned with most repetition was that of how to stimulate and hold the interest and attention of the student; probably in recognition of this problem, the need for teaching methods to stimulate interest in nutrition was specifically expressed by one dietitian.

Several persons commented that the decision on what to give students for written assignments in both nutrition and diet therapy was a problem area. Lack of preparation for class, lack of basic knowledge and poor study habits, and handing in assignments on time were mentioned by several respondents.

Other questions were: Should diet therapy be taught in general terms or with emphasis on the way it is carried out in the specific hospital? How can effectively supervised practice teaching with patients be given to the student nurse? How can the best use be made of curriculum time to accomplish objectives? Finally, four or five dietitians expressed concern over the idea of pretesting, laboratory and diet kitchen experience, and the lack of space for teaching laboratory material.

Summary

The returns of this questionnaire on the nutritional teaching of student nurses in Massachusetts indicate that the teaching dietitians are keeping abreast of the new developments and trends regarding nutritional teaching in schools of nursing. Yet we felt we could detect uncertainty and lack of knowledge on the part of the dietitians when it came to the area of integration of nutrition into the nursing curriculum. This appeared to be an often reiterated problem area, perhaps due in part to the lack of understanding by dietitians of what the nursing curriculum is and what it is trying to accomplish. It must, too, be recognized that often the objectives of nursing education are not always clearly defined or understood by those persons within the nursing school faculty itself, all of which contributes to the confusion and discouragement of the new nutrition teacher.

REFERENCES

(1) Cooper, L. F., Barber, E. M., Mitchell, H. S., and Rynbergen, H. J.: Nutrition in Health and Diseases. Philadelphia: J. B. Lippincott Co., 1953.
(2) Krause, M. J.: Nutrition and Diet Therapy in Relation to Nursing. Philadelphia: W. B. Saunders Co., 1952.
(3) Proudfit, F. T., and Robinson, C. H.: Nutrition and Diet Therapy. 10th ed. N. Y.: Macmillan Co., 1950.
(4) Johnson, D.: Modern Dietetics. N. Y.: G. P. Putnam Sons, 1951.
(5) Heseltine, M. M., and Dow, U. M.: The Basic Cook Book. Rev. ed. Boston: Houghton Mifflin Co., 1951.
(6) Guide for Planning Normal and Therapeutic Diets. Boston: Mass. Dietetic Assn., 1951.

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Current Literature

Contributed by Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; and the Journal staff

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 46, January, 1956

* Nutritional status of the aging. H. D. Chope and L. Breslow.—p. 61.

Vol. 46, February, 1956

* Some international trends in nutrition. Editorial.—p. 218.

Nutritional Status of the Aging. Although there has been an increase in life expectancy in all age groups, the dramatic increase has been in the very young. The expectancy of a person age sixty is little more today than it was fifty years ago. The five leading causes of death have shifted from infections to chronic diseases. In this study of 577 subjects in a seven-year period, 88 died, of whom 63 were males and 25 females. Evidence of the relationship between hypertension and overweight and mortality was found. In this series of persons over fifty, those with high levels of total blood cholesterol had a lower mortality rate than those with low amounts of total blood cholesterol. It was found that older people with low blood levels of vitamin A, niacin, and ascorbic acid suffer a higher mortality rate than those with greater amounts of these substances in their blood.

International Trends in Nutrition. Although gross undernutrition and malnutrition still persist in many parts of the world, in the United States the most damaging kind of malnutrition appears to be overweight—strikingly evident both statistically and physically. The food supply available to the American public in normal channels of trade, if consumed with reasonable discretion by a well informed public, would furnish an abundance of all the nutrients known to be necessary for optimum health. As a result of the broad advances in nutrition research and education and of the efforts of the United Nations personnel, world-wide attention has been focused on the need to provide for better nutrition for mothers and children. The problem centers most intensely on the need for good quality proteins, minerals, and vitamins.

BRITISH MEDICAL JOURNAL

No. 4959, January 7, 1956

* Late prognosis in celiac disease. M. K. Lindsay, B. E. Nordin, and A. P. Norman.—p. 14.

Celiac Disease. Twenty-five young adults who had celiac disease in childhood were reassessed fifteen years later. Four were found to be still relapsing or to have active disease. These patients generally appear clinically and biochemically normal, but under careful observation they are slightly below average height and considerably below average weight for their age. They are juvenile in appearance, dependent on parents, and tend to marry late. These characteristics may be attributed as due to long periods of malnutrition. In the future, with adequate treatment with a gluten-free diet, this should not be true, and celiac disease should not remain a chronic relapsing disease.

THE CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 74, January 15, 1956

* The Diepkloof nutrition and health study on Bantu boys, South Africa. H. leRiche, A. A. Kinnear, and R. J. Smit.—p. 130.

Nutrition Survey in South Africa. Two groups of South African Bantu boys, thirty in each group, were placed on two different diets for one year. Group A was placed on a good standard diet with high protein, fat, vitamins, and minerals. The other diet, commonly consumed by urban and rural Bantu, was low in animal protein, fat, minerals and vitamins. These children were clinically examined at the beginning and at the end of the year and large series of laboratory tests were carried out. Differences in height and weight between the two groups were small at the end of the project and not statistically significant. At the end of the study two observers found fewer with "normal" skin in the group on the less adequate diet. This difference was not statistically significant, though probably biologically significant. Nevertheless, when a dermatologist was asked to group the boys into a broad classification of "good," "doubtful," and "bad," without knowing their dietary category, he selected more boys as being "bad" in the group on the less adequate diet. Although serum Vitamin A and carotene and blood ascorbic acid values were lower in the B group, such levels could not be related to skin signs of malnutrition. Similarly, these vitamin levels could not be related to the occurrence of gingivitis. Findings in regard to dental caries were inconclusive. The eye findings could not be related to the vitamin levels studied. The question of concomitant disease, such as intestinal parasitism, schistosomiasis, cystitis, and syphilis is discussed.

DIABETES

Vol. 4, November-December, 1955

* Relative obesity and its health significance. A. Keys.—p. 447.
* Fluids and electrolytes in the therapy of diabetic acidosis. J. E. Howard, T. S. Danowski, H. C. Knowles, Jr., F. D. W. Lukens, and R. G. Sprague.—p. 465.

Obesity and Health. It is important to distinguish between obesity and overweight. Metabolically, the condition of overweight without obesity is diametrically opposed to the condition of simple obesity. As compared with men of the same age in other countries, the adult American male has a very poor total mortality record. Coronary heart disease is the outstanding cause of death among American men today. The majority of evidence is opposed to the common belief that overweight is an important factor in the development of coronary heart disease.

Fluids and Electrolytes in Diabetic Acidosis. Therapy for diabetic acidosis was discussed by a panel of doctors at the fifteenth annual meeting of the American Diabetes Association in 1955. The general opinion seemed to be that the deficits found in an average case are not to be replaced all at once and that in adults correction must be made at a leisurely pace. In considering the treatment, fructose and glucose were mentioned. Fructose was not thought of as a substitute for insulin, but as an adjunct dependent on the presence of insulin. It was fairly well agreed that the therapeutic benefits are slight.

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

Vol. 4, January, 1956

* Foods and nutrition in 1955. C. G. King.—p. 33.

Vol. 4, February, 1956

Orange carotenoids.

* Part I—Comparison of carotenoids of Valencia orange peel and pulp. A. L. Curl and G. F. Bailey.—p. 156.
* Part II—Carotenoids of aged canned Valencia orange juice. A. L. Curl and G. F. Bailey.—p. 159.

* Nutrients in rice bran and rice polish and improvement of protein quality with amino acids. M. C. Kik.—p. 170.

Foods and Nutrition Today. Scientific and technologic advances during

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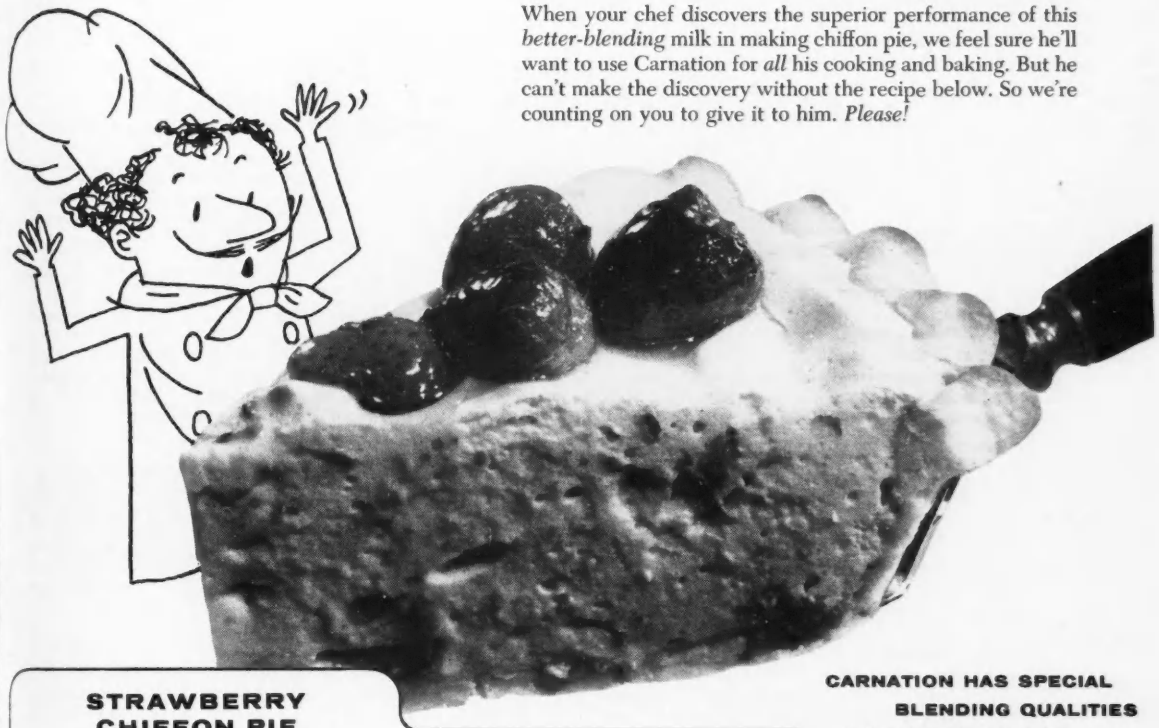

STRAWBERRY CHIFFON PIE

(Makes 9-inch single crust pie)

- 1 3-oz. package strawberry gelatin dessert
- ¾ cup hot water
- 1 cup undiluted CARNATION EVAPORATED MILK
- 2 tablespoons lemon juice
- ¼ cup sugar
- 1½ cups sliced fresh strawberries
- 9-inch single crust baked pie shell

Dissolve gelatin in hot water. Cool until thickened and syrupy (about 15 minutes). Chill Carnation in refrigerator tray until soft crystals form through milk (about 15-20 minutes). Whip chilled Carnation until stiff (about 1 minute). Add lemon juice and whip *very* stiff (about 2 minutes longer). Fold thickened gelatin, sugar and strawberries into *whipped* Carnation. Pour into cooled baked pie shell. Chill until firm (about 2 hours).

NOTE: One 10-oz. package defrosted frozen strawberries may be used in place of fresh strawberries and sugar in above recipe.

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the past year continued to equip us better to combat various forms of malnutrition and to improve our food supply. One advance was in the efforts to accelerate provision of adequate protein foods. In addition to progressing toward greater distribution and consumption of milk, meat, fish and eggs, a parallel program is working toward more efficient use of plant sources, such as from sesame seed. Remarkable progress was reported from chemical studies of nucleo-proteins and related substances. Highly purified virus preparations from which a pure protein fragment and a nucleic fragment could be dissociated and demonstrated to be without virus activity permitted recombining the two to form an active virus.

Carotenoids of Valencia Orange Peel and Pulp. A comparison of the peel and pulp of early-season Valencia oranges showed over 60 per cent of the total carotenoids but less free diols and polyols in the peel. Qualitatively the components were nearly identical; quantitatively peel carotenoids contained much more violaxanthin. Cryptoxanthin furanoxide was found in both pulp and peel carotenoids. The corresponding epoxide was present in peel carotenoids. No significant hydrolysis of xanthophyll esters or changes in composition of nonether carotenoids appeared after three years' storage at room temperature. The xanthophyll epoxides (about half of the total carotenoids of fresh orange juice) had entirely disappeared, while the corresponding isomeric furanoxides were present in greater proportions than in fresh juice.

Nutritive Value of Rice. The effect on growth and protein efficiency of adding lysine, threonine, and vitamin B_{12} to rations containing commercial rice bran and rice polish were investigated. Data are given on amino acid, vitamin, and mineral content of rice bran and rice polish. Results indicate that the proteins of commercial rice and rice polish can be improved by addition of lysine, threonine, and vitamin B_{12}.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 160, January 21, 1956

* Chinese eggs and food poisoning. Foreign Letters—England.—p. 227.
* Canned food. Queries and Minor Notes.—p. 250.

Vol. 160, January 28, 1956

* Food poisoning. Editorial.—p. 291.
* Trichinosis. Queries and Minor Notes.—p. 341.
* Sweet and sour cream. Queries and Minor Notes.—p. 342.

Vol. 160, February 4, 1956

* Cirrhosis in alcoholics—protein nutrition and hepatic coma. C. S. Davidson.—p. 390.

Vol. 160, February 18, 1956

Institute of Nutrition of Central America and Panama. Special Reports.—Council on Foods and Nutrition.—p. 561.

* Amino acid balance. Queries and Minor Notes.—p. 608.

Chinese Eggs and Food Poisoning. A batch of Chinese frozen eggs were found to have caused outbreaks of paratyphoid. The investigation resulted from efforts to track down six outbreaks of paratyphoid associated with cream cookies made by six bakeries. No carriers were found among the food handlers, but it was noted that every bakery used a particular batch of Chinese frozen eggs that were infected.

Canned Food. Commercially canned food will keep in good condition almost indefinitely and can be used without fear as long as the container shows no evidence of deterioration, such as bulging ends and/or excessive rusting. One should bear in mind the warnings on labels advising that products should be kept refrigerated or frozen.

Food Poisoning. Food poisoning is defined as illnesses due to preformed toxins that may cause acute gastrointestinal symptoms or disturbances of the central nervous system. They may be of bacterial origin or due to: normal constituents of plants and animals eaten in the belief that they are foods, food infection by organisms such as Salmonella, or chemicals accidentally introduced into foods, or due to food allergies. Micrococcic enterotoxins entering food is a year-round occurrence. No food poisoning will occur unless the organism is allowed to incubate for several hours at room temperature or higher. Placing food in a refrigerator or cooking it in a large container will not inhibit the incubation in the central portion for a matter of hours; cooking may actually increase the growth. Flat containers not more than 4 in. deep are recommended, especially for refrigerator storage. This type of poisoning is commonly traced to ham, chicken salad, filling of pies, layer cakes, and milk products. Salmonellosis is more properly considered a food infection than poisoning. Usual vehicles include pork, turkey, custard, ice cream, and eggs. Deaths from salmonellosis are rare except in very old or very young patients.

Trichinosis. Microscopic inspection of every piece of pork processed is the only method of inspection for *Trichinella spiralis*. The parasites are easily destroyed by heat, being killed at temperatures of 55°C. in a few minutes. Pork can be rendered safe if refrigerated at about −12°C.

Sweet and Sour Cream. Sour cream is defined as cream whose acidity is more than 0.2 per cent, expressed as lactic acid. There is no difference in the process of butter manufacture from either sweet or sour cream.

Protein Nutrition and Cirrhosis in Alcoholics. Alcoholics form the largest number of patients in whom cirrhosis develops in this country. They notoriously consume food deficient in protein but adequate or sometimes high in calories, resulting in fatty infiltration, areas of necrosis, and subsequent fibrosis. The conclusion, from analogy to the animal studies, that dietary deficiency, especially of protein, is important in the pathogenesis of cirrhosis in alcoholics is probably valid, but the identity and relative importance of any one or group of these nutrients in treatment must await further evidence. The determination of the significance of the two lesions, fatty infiltration and necrosis, must also await further clinical and pathologic investigation. There is still reason to believe that factors other than defects in nutrition are important in the pathogenesis of cirrhosis. Nevertheless, faulty nutrition is probably the most important cause.

Amino Acid Balance. The effect of adding a single amino acid to a diet depends on the level added and the level of and amino acid composition of the dietary protein. Adding an amino acid to a diet fairly high in a good quality protein will do no harm but, on the other hand, will have little benefit. If the level of dietary protein is low, or if the protein is incomplete, benefit will result only when all the amino acids supplied in limiting amounts are added. If two or more amino acids are limiting and only one is supplied, deleterious effects may occur.

JOURNAL OF HOME ECONOMICS

Vol. 48, February, 1956

* Creative cooking. H. McCully.—p. 98.
* Practices and preferences in consumption of sweet milk and "competing" beverages. D. Dickins and A. A. Fanelli.—p. 114.

Creative Cooking. Cooking gives pleasure to everybody, not excluding the cook. When you think of your cooking as an art rather than a chore, it becomes creative, no matter if you are grilling a steak, frying pancakes, or making bread. New recipes available from all over the world employ a variety of foods and ideas to make meals attractive and imaginative.

Sweet Milk and "Competing" Beverages. A total of 405 homemakers were asked about their usual beverage for breakfast, dinner, supper and between meals in winter and summer and their preferred beverage when a choice between sweet milk and another drink such as tea, buttermilk, coffee, cocoa/chocolate drinks, powdered, and soft drinks. Sweet milk competed with coffee at breakfast in both winter and summer and with coffee at winter dinners and tea during summer dinners. It was found that more older women (over fifty) preferred milk at certain meals and seasons to some of the popular beverages. The survey showed that the cocoa/chocolate drinks composed of milk were selected rather than sweet milk at breakfast in both seasons, and at supper and between meals in the winter.

JOURNAL OF THE INDIAN MEDICAL ASSOCIATION

Vol. 25, December 16, 1955

* Nutritional liver disease and its therapeutic considerations. P. N. Wahi.—p. 558.

Nutrition and Liver Disease. Nutritional factors play significant roles in conditioning, precipitating, or modifying the ocurrence and manifestations of liver disease. Fatty infiltration by itself does not cause any functional impairment in the early stages, but when it accumulates, the cells bearing it rupture and extracellular depots are formed. Total caloric and protein intake, as well as vitamin B factors, notably pyridoxine, play a significant role in the amount and site of fatty deposition. Almost established is the theory that SH containing amino acids, such as cystine and methio-

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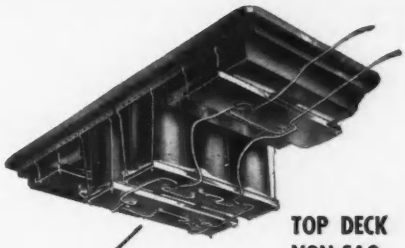

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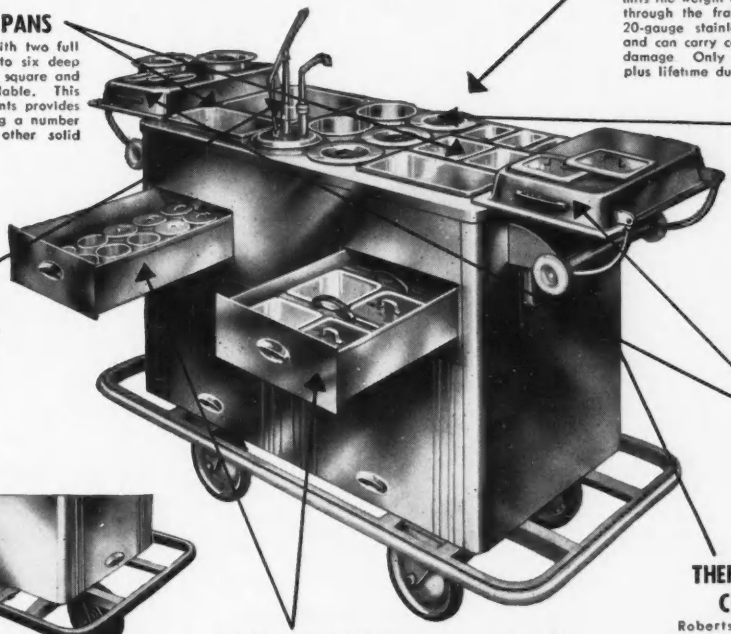

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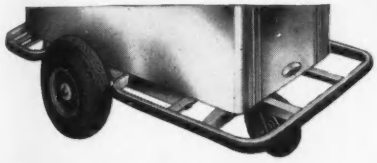

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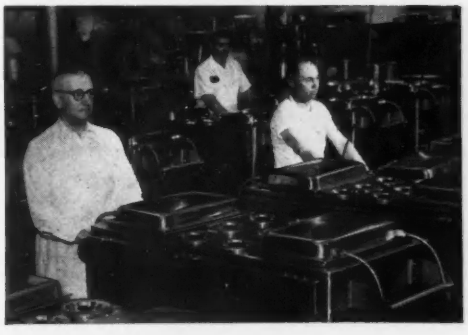

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nine, can protect against liver necrosis induced by dietary deficiencies. It is widely held that fatty infiltration and/or necrosis leads invariably to cirrhosis and that possibly a toxic factor, bacterium, or virus is the precipitating agent. Alcohol has been shown to be a toxin in three ways, and alcoholics have different aptitudes toward dietaries as compared to normal individuals. Hence they are likely to develop other nutritional injuries simultaneously. In general, therapy for necrosis should aim at giving a high-protein dietary, vitamins E and A, and American brewer's yeast. In most liver disorders, carbohydrate supplement is helpful, partly by supplying energy and partly by its protein-sparing effect. In cirrhosis, lipotropic and antinecrotic factors may be used with advantage in the early stages.

THE JOURNAL OF NUTRITION

Vol. 57, December, 1955

* Relationship of dietary protein and food intake to pyridoxine nutrition in the rat. P. G. Tulpule and J. N. Williams, Jr.—p. 529.
* Experimental obesity. I. Production of obesity in rats by feeding high-fat diets. O. Mickelsen, S. Takahashi, and C. Craig.—p. 541.

Dietary Protein, Food Intake and Pyridoxine Nutrition. Throughout the world, human dietary habits roughly correspond to feeding procedures as: restricted protein intake, high-protein intake, and restricted food intake. If, in addition to these patterns, one or more vitamins is deficient or borderline, its storage and utilization could be greatly influenced. Because of the central role it plays in protein and amino acid metabolism, pyridoxine was selected for this study. One of the most important conclusions of this study, performed with rats, is that regardless of previous pyridoxine-deficiency, the rats were able to restore tissue pyridoxine concentrations to normal when a complete, 20 per cent casein ration was fed *ad libitum* for two weeks.

Production of Obesity in Rats with High-fat Diets. It was concluded from this study that obesity does not result from any genetic or hormonal disturbance. Obesity was produced in normal male rats by the *ad libitum* feeding of a diet containing 63 per cent fat and adequate amounts of vitamins, minerals, and protein. Weanling rats fed this diet gained weight faster than rats on the best low-fat or stock diets. Three strains of rats showed the same response. The maximum weight attained on the high-fat diet was 1655 gm. Approximately 70 per cent of the weanling rats of the Osborne-Mendel strain randomly selected from the stock colony attained weights over or close to 1000 gm. when fed the high-fat diet.

THE JOURNAL OF PEDIATRICS

Vol. 48, February, 1956

* Acerola juice—the richest known source of vitamin C. A clinical study in infants. N. C. Clein.—p. 140.
* Growth curves of height and weight by age for boys and girls, scaled according to physical maturity. N. Bayley.—p. 187.
* Geographic variations of dental caries in Oregon. VII. Caries prevalence among children in the Blue Mountains region. D. M. Hadjimarkos.—p. 195.

Acerola—Richest Source of Ascorbic Acid. Acerola juice is the richest known source of ascorbic acid, having from fifty to one hundred times the content of orange juice. Thirty infants ranging in age from three to seven weeks were given acerola juice as the only significant source of ascorbic acid in their diet. All showed average or better growth and development for their age and weight. Plasma ascorbic acid levels of all infants were above average after the acerola juice was introduced into the diet. No reactions occurred from ingestion or from skin and intradermal tests with acerola juice. Acerola juice can be blended with apple juice which is naturally low in ascorbic acid and used to satisfy the ascorbic acid requirements in infant feeding. It is particularly valuable in infants who are allergic to orange juice or where the family allergic history deems it advisable to delay giving orange juice until one year of age.

Growth Curves of Children. Normally, a child's weight curve should be in the same channel as his height curve, and the two curves should follow the same pattern of annual increments. The extent and direction of disparity in channels for a child's weight and height are indicators of his or her nutritional status. Charts devised to rule out deviations due to normal variations in degree of maturity and in the child's maturational rate are illustrated. Many children tend to put on extra weight during the prepubertal period at about ten to twelve years, and this is the period when childhood obesity is more likely to be seen. Such fat usually disappears as soon as pubertal maturing and rapid growth in height are well started. The child's weight will then return to his normal channel as he regains balance in his hormonal functioning.

Dental Caries in Oregon. A series of regional epidemiologic studies on dental caries have been conducted in Oregon among native-born and -reared white children. These are the first such studies undertaken in the Pacific Northwest. The results demonstrated statistically that school children born and reared in regions of Oregon located east of the Cascade Range have lower caries than those living in regions west of the mountains. Investigation of environmental factors for an explanation of this variability produced two significant findings: (a) an inverse relationship between amount of sunshine available in an area, in combination with altitude, and caries prevalence rates and (b) a direct relationship between urinary selenium concentration and caries susceptibility.

THE LANCET

No. 6908, January 14, 1956

* Continuous intragastric milk drip in the treatment of uncomplicated gastric ulcer. R. Doll.—p. 70.

Milk Drip in Gastric Ulcer. Two groups of eighty-two patients were studied as to the value of continuous intragastric milk drip in the treatment of gastric ulcers vs. the Sippy regimen. Intragastric milk drip treatment was provided in addition to the Sippy regimen. The proportion of ulcers which healed were identical in both groups. The average amounts healed, expressed as a percentage of the mitral size of the ulcer, were also similar. The impression was that pain was relieved more rapidly with milk drip, and these patients showed greater increase in weight.

NEW ENGLAND JOURNAL OF MEDICINE

Vol. 254, January 26, 1956

* Current status of the clinical use of antibiotic-vitamin combinations. G. A. Goldsmith.—p. 165.

Antibiotic—Vitamin Combinations. The influence of vitamins on resistance to infections in man remains largely unknown. There is considerable evidence that infections and other stress situations influence the requirement or utilization of certain vitamins, but there are few, if any, data regarding exact requirements in specific pathologic states. The therapeutic value of large doses of vitamins in infections has not been appraised critically. Antibiotic administration has been found to have a sparing action on certain vitamins in several animal species. This action appears to be an effect on the intestinal flora and is not observed when the diet is adequate in these vitamins. A few studies suggest that under certain circumstances antibiotics may spare some of the vitamins in man, but under other conditions, antibiotics may lead to vitamin deficiency. Some of the lesions which develop in the course of antibiotic therapy that have been attributed to an inadequate supply of vitamins may be explained by complicating fungus infections, but other lesions may reflect a true deficiency state. The possibility that antibiotics induce vitamin deficiency by competitive blockage of intracellular metabolism has not been ruled out. If this should be true, administration of vitamins might lessen the effectiveness of antibiotics. The administration of antibiotic and vitamin combinations, as compared with antibiotics alone, in specific infections has not been tested. Until more information is available, it is impossible to state which vitamins, if any, should be administered with which antibiotic in the treatment of a given infection. The importance of maintaining adequate nutrition during infections, and many other diseases, has been recognized increasingly in recent years, but much remains to be learned about what constitutes adequate nutrition. Calories, water, protein, vitamins, and minerals must all be supplied in proper amounts, and each patient presents an individual problem.

NURSING OUTLOOK

Vol. 4, January, 1956

* From pots and pans to patients. M. Sledge and H. M. Coston.—p. 30.

Arithmetic, algebra, and geometry are not the only sources of figure problems for the teen-age girl.

Just as important—or more so—is the problem of maintaining her own figure in the not-too-fat, not-too-thin proportions that are just right for her height and build . . . the good figure that helps make her happy and self-confident.

Adolescence is the age of fads and fancies—in diet as in dress—and surveys show that the eating habits of many teen-agers rate a poor grade on the mealtime report card. Insufficient milk to supply the calcium necessary for this period of rapid growth . . . too little emphasis on nutrient rich foods such as dairy products, meats, fruits, vegetables . . . too many high-calorie, low-nutrient snacks . . . these are among the faults which research shows to be common in many teen-age diets.

Figures present a problem...

Doctors, nurses, teachers, and parents must help the teen-age girl realize that eating a combination of the protective foods in amounts which meet her energy and nutrient needs will not make her fat... but will permit her to be her most attractive, energetic, and interested self . . . help her to keep a trim figure while building health for today's happiness as a pretty girl . . . and tomorrow's happiness as a wife and mother.

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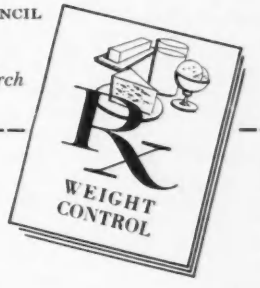

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* Diet instruction for patients at home. K. B. Weber.—p. 39.

Nutrition for Nursing Students. The patient's diet is prescribed and planned by the physician and dietitian, but nurses are the logical persons to help patients understand and accept dietary restrictions. A special committee at the University of California at Los Angeles has studied this problem and suggests some interesting curriculum changes to make nutrition a more useful part of nursing students' education. Under this plan the students spend a week in each clinical area during which all activities are planned to promote learning in nutrition and diet therapy. The first laboratory experience is in maternal and child health nursing, followed by the medical-surgical nursing. Experiences related to diet therapy are scattered throughout the time they spend in giving nursing care to patients in the clinical areas. Each student prepares a nursing care plan for each of her patients. Her role in helping the patient understand his dietary plan is an integral part of this plan.

Dietary Instruction for Patients at Home. The effectiveness of diet therapy depends on a patient's ability and willingness to follow instructions. The family of the patient must accept his illness or restrictions and must understand the importance of the diet. Suggested menus must be explained so that the patient and his family do not regard them as inflexible or impractical. Sometimes families need help in adjusting the food budget so that the prescribed foods can be obtained. Some persons, after having been given the essential information about their diets, can adapt printed instructions and information to their particular needs, but many need continued instruction and assistance. These are the people who cannot give their full attention to lectures or classes while they are in the early stages of adjusting to therapeutic diets.

NUTRITION

Vol. 9., Winter, 1955
* Problems in connection with nutrition of elderly people. M. Warren.—p. 154.
Cost of diabetic diets.—p. 166.
* Nutritional aspects of food processing. F. Aylward.—p. 168.

Nutrition of Elderly People. Physical factors influencing the diets of older people include: teeth, since many old people have either ill fitting or no dentures at all; senses of sight and smell, which diminish; and digestive juices, which lessen. Some old people are infirm or crippled and so shopping and cooking are hard and difficult. Influencing psychologic factors are food fads developed during a lifetime and feelings of loneliness, isolation, frustration, or anxiety which cause lack of appetite or no incentive for food. Inconvenient living conditions and low incomes cause purchase of cheap foods. Under- or overeating a balanced diet is often found. It is hard to build up the person who is undereating the balanced diet, because he is not interested in food beyond the minimum required. Malnutrition from an unbalanced diet is common and harmful when it results in obesity. Obesity and associated conditions form most important groups of conditions encountered in geriatric medicine.

Nutritional Aspects of Food Processing. Any method which conserves food and reduces waste, increases palatability, and makes it more acceptable for the individual is important to the nutritional aspects of our meals. Food processing makes such things as green vegetables and fruit juices available the year round. But the dangers of overrefining must be kept in mind. All food processes should be examined in the nutritional laboratory before they are available to the public. The public must be educated in nutrition, so that food firms will regard it as normal to seek a nutritional evaluation of their products.

NUTRITION REVIEWS

Vol. 14, January, 1956
* Nutrition of Alaskan Eskimos. E. M. Scott.—p. 1.
* Human heart changes in prolonged potassium deficiency.—p. 9.
Vol. 14, February, 1956
* A nutrition officer's experiences visiting the Southwest Pacific islands. M. E. Bell.—p. 33.
* Human pantothenic acid deficiency.—p. 37.

Nutrition of Eskimos. The Eskimo originally utilized for food almost every Arctic plant and animal with any possible nutritional application. On the Arctic Ocean and Bering Sea coasts, food was obtained from the seal, walrus, and whale, supplemented by birds, eggs, fish, shellfish, and plants in small amounts. Further south, the principal source of calories was fish, which were abundant in rivers and tundra ponds. This was supplemented by small mammals—as mink, muskrat, and rabbit—birds, eggs, and plants. A small group of inland Eskimos depended primarily on caribou supplemented with fish. These diets were low in plant foods, carbohydrate, calcium, and ascorbic acid. There are no known nutritional disadvantages to this primitive Eskimo diet and one known advantage—Eskimos had almost perfect teeth.

Heart Changes in Potassium Deficiency. Clinical chronic potassium deficiency in man has been correlated with post-mortem histologic and biochemical observations. The pathologic changes of acute and chronic potassium deficiency have been well described in the experimental animal. In a study of two patients, one with chronic steatorrhea and one with ulcerative colitis, there were prolonged low serum potassium concentrations and characteristic electrocardiographic changes. Hypotension and severe generalized muscular weakness characterized the clinical condition. The first patient had focal loss of striation and vacuolization of myocardium. No coronary artery changes were observed. The myocardial potassium was reported about 5 per cent of normal, and lesions were not severe. The myocardial changes in the second patient were more severe. The findings seemed to resemble the severe endocardial and myocardial fibrosis, with or without thrombosis, recently found in Africa. Although simple dietary potassium deficiency is probably not the explanation for the African cases, chronic diarrheas, prolonged protein deficiency, and other factors may be conditions which might unmask a latent potassium deficiency.

Nutrition in Fiji and Western Samoa. Living communally, native Fijians have diets of dalo, yam, tapioca, breadfruit, banana, and coconut, some fish and land crabs, very little milk, and no maize. In the main they are well nourished in contrast to the Indians of Fiji. Once fixed by custom at two years, the Fijian weaning period is now one year, accounting for the appearance of kwashiorkor. The infant is suddenly deprived of protein and does not receive it at family meals where the elders eat the protein foods. The Indian infant has a two-year weaning period and thus has an advantage over the Fijian infant. Moderate degrees of anemia were found in the Fijian and Samoan children, ages six to nine. The same was true for Indian women of child-bearing age and of Indian infants one to two years old. Among the Island peoples, the dental caries rate is low, as are the disorders of pregnancy.

Human Pantothenic Acid Deficiency. Reporting results of studies on three out of four normal subjects on a pantothenic-acid-deficient diet, who received a pantothenic acid antagonist, several symptoms were found. Included were easy fatigability, paresthesias of hands and feet, and respiratory infections, particularly acute pharyngitis. Biochemical changes included impaired ability to acetylate para-aminobenzoic acid, reduction in blood cholesterol, decreased eosinopenic response to ACTH, increased sensitivity to insulin, and a reduction of urinary 17-ketosteroid excretion. The volunteers became very ill during the study, and time is needed to repair the deficiency, which continued in spite of the administration of large quantities of pantothenate. Only following discontinuance of the antagonist and resumption of a general diet supplemented with vitamins and cortisone did a favorable response occur. No doubt exists that a severe illness occurred associated with: a purified diet, omission of pantothenate, addition of the antagonist, supplementation with thiamine, riboflavin, pyridoxine, niacin, cyanocobalamin, ascorbic acid, vitamins A and D, and salts.

SCIENCE

Vol. 123, January 20, 1956
* Absorption and metabolism of iron. C. J. Gubler.—p. 87.
Vol. 123, February 3, 1956
* Body composition and energetics in obesity induced in mice by adrenotropic tumors. J. Mayer, C. Zomzely, and J. Furth.—p. 184.

Absorption and Metabolism of Iron. The average human body contains approximately 4.5 gm. iron. The total iron content of a diet can be found by consulting dietary tables, but they do not give the proportion of iron made available for use by the body. That is dependent upon factors within the body and the form of the iron. Ferrous iron

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for example, is generally absorbed to a greater extent than ferric. The reduction of ferric ions to ferrous form by ascorbic acid, sulfhydryl groups, and others takes place more readily at acid *pH*. Another factor influencing iron absorption is the acidity of the gastric juices. Phytic acid and other organic acids occurring in foods form insoluble or undissociated iron complexes, and the presence of much phosphate in the diet can materially reduce the absorption of iron. Thus, with this listing of a few of the factors influencing iron absorption, one can see that food high in iron may not necessarily be a good source of biologically available iron.

Body Composition in Obese Mice. In these experiments, mice bearing small grafted tumors had a normal weight but more than twice the normal fat content. They were obese as determined by body composition. They were used to study metabolic obesity and the mode of action of corticosteroids.

THE TOHOKU JOURNAL OF EXPERIMENTAL MEDICINE

Vol. 63, December 25, 1955

* Hepatic enlargement of children with nutritional dystrophy. Studies on the nutrition of children in Hirosaki area (23rd report). T. Arakawa, Y. Sato, A. Izurumachi, and C. Morinaga.—p. 81.
* Hepatic enlargement of breast-fed infants and its relation to nutritional dystrophy of their mothers. Studies on the nutrition of children in Hirosaki area (24th report). T. Arakawa, Y. Sato, and A. Kagaya.—p. 87.
* Liver biopsy findings in children with nutritional dystrophy. Studies on the nutrition of children in Hirosaki area (25th report). Y. Sato.—p. 93.
* Protein-bound iodine levels in children with nutritional dystrophy. Studies on the nutrition of children in Hirosaki area (26th report). T. Hashimoto.—p. 103.

Enlarged Liver in Children with Nutritional Dystrophy. Children of this study attended primary schools in Hirosaki and rural villages. Enlarged liver was more frequently found in children with nutritional dystrophy than in those without degeneration. The causes were ascribed to hydropic degeneration of hepatic cells rather than to fatty degeneration of these cells and the pathologic changes in these cells due to high-carbohydrate-low-protein diet.

Enlarged Liver in Breast-Fed Infants. Children of this investigation were those exclusively breast-fed, twelve months or younger, and free from any complaints of illness. Greatest amount of enlargement was among the infants fed on milk from mothers with nutritional dystrophy. Although hepatic enlargement seemed to be closely related to nutritional dystrophy of the lactating mothers, it may be related to other factors in the milk in addition to low—riboflavin content.

Liver Biopsies in Children with Nutritional Dystrophy. Children investigated were those who showed marked signs of nutritional dystrophy not complicated with other severe illnesses. They were from the poorer classes and showed clear features of ariboflavinosis. The appearance of plant, cell-like hepatic cells was found in twenty-two of thirty biopsied livers.

Iodine Levels in Children with Nutritional Dystrophy. Boys, ages eight to ten, apparently in good health were studied. They attended the primary school where nutritional dystrophy was prevalent. Some had severe symptoms, others less severe symptoms. A low level of protein-bound iodine was found in the boys with severe symptoms of nutritional dystrophy. Still to be determined is whether the low level is a manifestation of hypoalbuminemia or due to a depressed function of thyroid.

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AMERICAN RESTAURANT MAGAZINE

Vol. 40, February, 1956

* 104-point list for planning a restaurant. M. K. Cohen.—p. 92.
* High in flavor, low in calories. L. D. Freeman.—p. 144.

Check List for Restaurant Planning. The author presents, in the form of a 104-point check list, the essential elements which go into planning a restaurant. His listing is comprehensive, covering the following subjects: menu, service, business promotion, property, kitchen production, communication, atmosphere, sanitation, bookkeeping controls, personnel, miscellaneous, and budget.

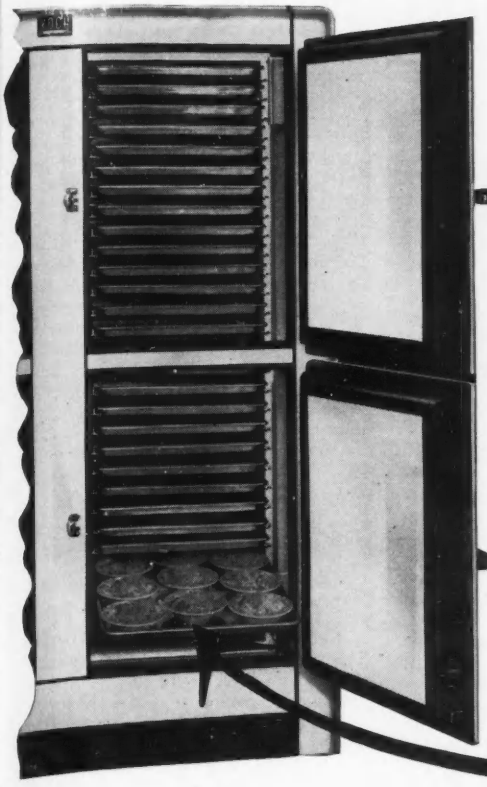
Weight-Watching Luncheons. Foods high in flavor and low in calories are a permanent part of the menu in many restaurants today. Such luncheons should emphasize protein-rich foods, vegetables, fruits, and dairy products. But to satisfy the dieter, careful kitchen preparation is most necessary. The food must look as well as taste appealing—colorfully garnished and served on attractive china. Light desserts, such as gelatins or sirup-free fruits, are important on low-calorie diets, for a light sweet dessert satisfies a desire for something sweet to "top off the meal" and also increases the satisfaction derived from the meal. They are easily prepared, easily stored, and are low in cost.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 20, February, 1956

* Metal kitchen equipment can be kept bright. M. C. Barnes.—p. 52.

Cleaning Metal Surfaces. Surfaces to be cleaned are made from a variety of metals and contain varying amounts of chemically different types of soil, deposited under varying circumstances. Thus we need both alkaline and acid detergents to do a good job of cleaning. The alternate system of cleaning is based on the use of mild alkaline detergents most of the time and organic acid detergents instead of the alkaline



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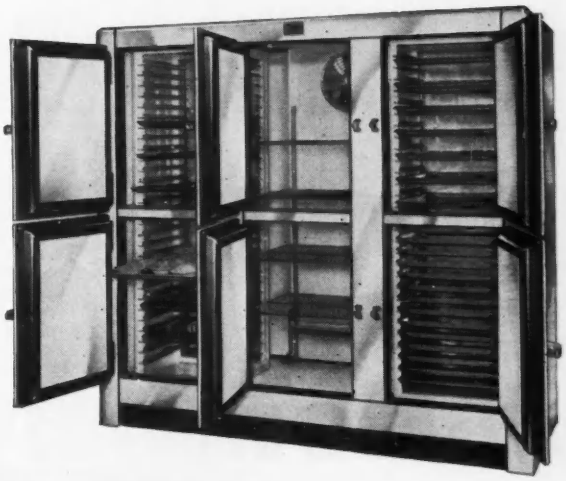

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detergents every third or fourth day, depending on local water and soil conditions. Certain points should be emphasized in the use of acid detergents: the higher the temperature at which the acids can be applied, the faster they react with mineral deposits—but there is no advantage in boiling the solution. It is also important that adequate brushing be given to heavy mineral deposits. All surfaces should be well rinsed after cleaning. No other cleaning materials should be mixed with or added to acids. In addition to the alternate cleaning method in keeping kitchens bright, it is important to work out and post a periodic cleaning schedule. A certain amount of cleaning should be done each day, and a chart should be posted listing last cleaning dates of those items which need to be cleaned once or twice a month. The author includes individual cleaning discussion of specific items of kitchen equipment.

FOOD TECHNOLOGY

Vol. 28, February, 1956

* Advances in spray drying improve flavor quality. F. E. Stieff.—p. 76.

Technical tips on how to use chocolate products in ice cream. F. X. Kobe.—p. 81.

Spray Drying of Flavors. Liquid flavors which are first emulsified with gum arabic, then "spray dried" in a continuous, instrument-controlled process, are said to retain potency and have greatly extended shelf-life. The process is said to insure uniform dry-flavor quality, minimum flavor loss throughout greatly extended storage and shelf-life, and reduced costs through mass-production methods. Thus manufacturers hope to offer spray-dried genuine fruit flavors with a life of several years, and spray-dried fruit juices with flavor quality almost indistinguishable from fresh fruit and possessing shelf-life far beyond anything now known. Spray-dried powdered fruit, useful for many new and unheard of applications in packaged food products, is also thought possible.

HOSPITAL PROGRESS

Vol. 37, January, 1956

* Nutritional status of the aging. H. D. Chope and L. Breslow.—p. 46.

Nutrition of Aging. This study on nutritional status of aging was made with 577 healthy volunteer subjects, aged fifty to ninety years. Complete analysis of the data is not yet available but certain relationships between nutritional status and health can be explored from existing information. Heart and circulatory diseases, nervous system diseases, and malignant neoplasms have accounted for 85 per cent of the deaths to date of this group, the first category being the greatest killer of all the diseases. Thus exploration of any relationship between nutrition and heart disease would be worth while. The studies also indicated that obesity and cardiovascular disease and cardiac deaths are frequently related. The data failed to sustain a relationship between high serum cholesterol and hypertension or cardiovascular-renal deaths. In fact, the reverse seems true, and those subjects with the lower blood cholesterol levels suffered the highest death rates from cardiovascular-renal disease. Analysis of this relationship in two age groups—those seventy years or over and those under seventy years of age, disclosed that mortality in the former group did not vary with the cholesterol level; among persons seventy and over, the higher the cholesterol the lower was the mortality. A suggestive relationship was found between mortality and the blood levels of vitamin A, niacin, and ascorbic acid. Indication was that older persons with low blood levels of these substances suffer a higher mortality rate than do persons with greater amounts of these substances in the blood. Indication of poorer dentition among persons in low-income groups than among those enjoying a higher level of living was also found.

HOSPITALS

Vol. 30, February 1, 1956

* Realistically facing the dietitian shortage. A. C. Bannister.—p. 53.

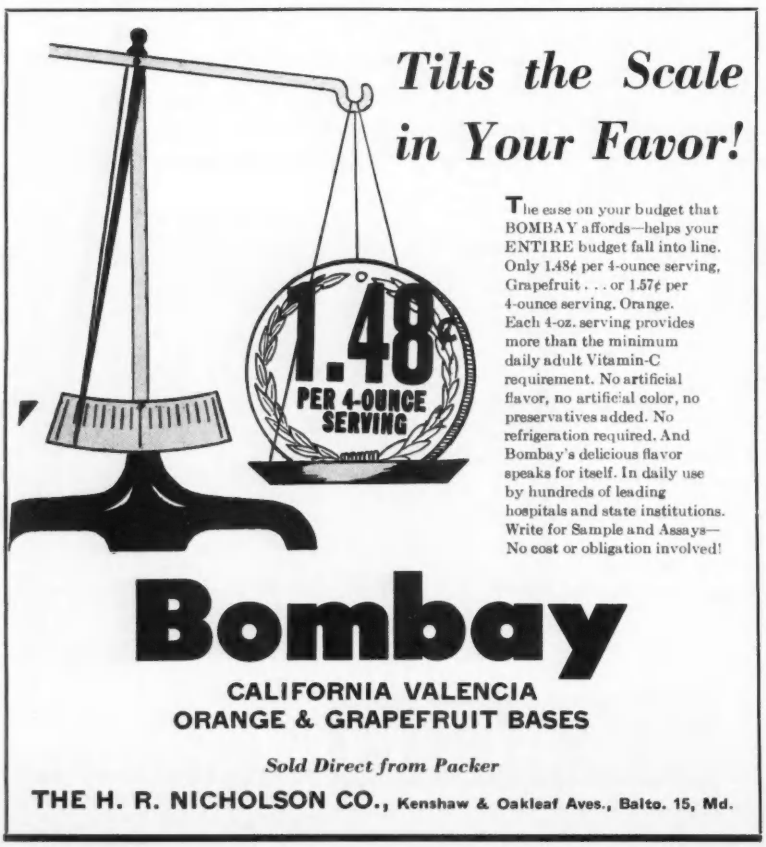
Facing the Dietitian Shortage. This report from a 1067-bed hospital for general medical, surgical, tubercular, and neuropsychiatric patients reviews the dietitian's role. In this hospital, she has been removed from those chores that can be performed as efficiently by well trained, nonprofessional personnel. Where the professionally qualified dietitian is on duty, there is a definite need for her services to provide administrative control, teaching, patient contact, and professional or community liaison. Much responsibility is now centered in the food service supervisors, and many tasks in food production and service have been delegated to nonprofessional skilled and semi-skilled personnel. This has been done by scaling jobs to the level of skills that can be developed by training in available personnel. The training program is not just geared to improve departmental efficiency or economy; frequently it is directed to shift detail work from the dietitian to a nonprofessional skilled or semi-skilled employee. The training should be centered in a single individual, if it is to be successful. It is extremely important that the training person be a professionally qualified dietitian.

THE HOTEL MONTHLY

Vol. 64, February, 1956

* Profit from modern cooking equipment.—p. 37.

Modern Cooking Equipment. Commercial cooking equipment has come far in not too many years. Its streamlined, precision controlled, specialized units can make the difference between profit and loss. The evolution of modern cooking equipment is briefly described, and the role of equipment in today's kitchen operation is reviewed and analyzed. These facts and "documentary evidence" from some of the country's hotel chefs indicate that the solution to problems which hotel man-



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agers and chefs must live with everyday, i.e., scarcity of trained cooks and bakers, mounting labor and food costs, increased demands for speed and quality, may well lie with modern commercial cooking equipment used to the maximum efficiency.

INPLANT FOOD MANAGEMENT

Vol. 3, February, 1956

* Four steps to economy with pre-cut ham.—p. 26.

Precutting Ham. Cut in advance of cooking, ham can be served in many ways over a period of several days. The hock can be used for seasoning or dicing; outside, inside, and knuckle pieces can be roasted, fried, or broiled as ham steaks—or sliced and heated. Remaining meat from the bones can be diced for scalloped dishes, served with scrambled eggs, or ground for a tasty ham loaf. These boneless pieces cook quickly and save valuable oven space, taking less than half the time required for a whole ham. Carving and portioning can be controlled. A new method of cutting ham, developed by the National Live Stock and Meat Board and the U. S. Department of Agriculture, is described and illustrated in four easy-to-follow steps.

INSTITUTIONAL FEEDING AND HOUSING

Vol. 6, February, 1956

* Reduce loss and pilferage. C. Blackburne.—p. 22.
* Grease is a hazard!—p. 28.
* Dried eggs store well.—p. 44.
* How to adapt recipes to meet your needs. P. J. Aldrich.—p. 50.
* Cook pork for profit.—p. 52.

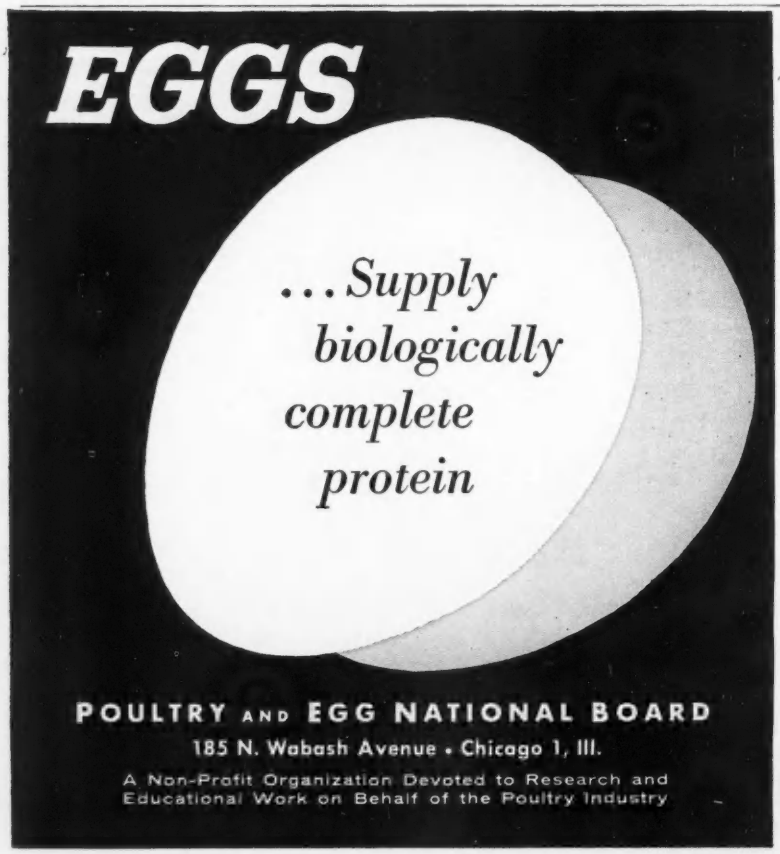
Reducing Loss and Pilferage. Whether an article is taken deliberately as a theft, misplaced, or thrown out with the garbage and trash, the cafeteria operator suffers loss. There are two ways to attack the problem: with the customers, it is mainly a matter of educating them to regard tableware as expensive company property; with employees, it is also a matter of getting them acquainted with the cost of every item of expendable equipment they handle. A large chain of industrial cafeterias issued an employee bulletin on the subject, pointing out that breaking one coffee cup means the loss of profit on the sale of thirty cups of coffee; a knife or fork lost in the garbage or trash represents the profit from more than five full meals. A board showing pieces of china, glass, and silverware was made up with the cost of each item mounted below it. This board was installed near the soiled dish table, and unit managers were instructed to discuss the problem with employees in terms of dollars and cents. This program, in combination with a good "policing" program, helped the situation. Customers also can be educated to realize the value of lost equipment. One solution may be to sell the expendable equipment at actual cost. A board set up similar to the one used to educate the kitchen help might state that the equipment is available to the customers at cost.

Grease Is a Hazard. One out of every three restaurant fires is said to be caused by mishandled grease or from accumulation of grease deposits in the kitchen. Fire hazards in a commercial kitchen can be greatly reduced by proper design, installation, and maintenance of a grease control system—range hoods, filters, blowers, and ducts. Starting with the range hood, the general design factors to be considered are listed. Directions for cleaning grease filters are included.

Dried Eggs. Dried eggs and egg products store well, take up little room, and may be substituted for whole eggs, whites, or yolks in most dishes. The separated yolks and whites are convenient when one or the other is needed alone. Dried egg yolks may be used to give color and richness to doughnuts, waffles, muffins, and cakes. Dried egg whites improve meringues and egg whips, as well as creams, cream fillings, and sauces. Dried whole eggs make an excellent "brush" for rolls or a "coating" for roasted meats and vegetables. Dried whole eggs, whites, and yolks should be kept in tightly closed containers of glass, metal, or plastic. They store best in a refrigerator or in temperatures lower than 55°F. Reconstituting dried eggs is based on the dried product and enough water to equal a 2-oz. egg. For each whole egg equivalent, mix 2½ Tbsp. dried whole egg with 2½ Tbsp. water. For each egg yolk equivalent, mix 2 Tbsp. dried egg yolk with 2 Tbsp. water. For each egg white equivalent, mix 2 tsp. spray-dried egg white with 2 Tbsp. water. One-half Tbsp. pan-dried egg white and 2 Tbsp. water also equal one fresh egg white. Most dishes containing dried eggs should be thoroughly cooked. A purchasing guide for dried eggs and dried egg products is included.

Adapting Recipes. Recipes frequently need to be adapted to equipment or to meet special requirements. The author offers a simple five-step formula for decreasing or increasing the yield of a recipe, using a baked macaroni and cheese recipe for clarification and illustration.

Cooking Pork. Fresh pork must be thoroughly cooked to be safe for human consumption. When the meat has changed from pink to grayish white throughout, it has reached the proper temperature to kill any parasites present. A meat thermometer provides an even surer method of determining when pork is done and safe. Certain cuts are roasted for best results. These include loins, fresh hams, picnics, Boston butts, smoked hams, and shoulder butts. Braising or pan and grill frying is best for chops, spareribs, bacon, sausage, fresh side meat, and blade steaks. Pork should be roasted at 325°F. in an uncovered shallow pan, fat side up so it will be self-basting. Broiling is suitable only for cooking cured pork because this method often fails to cook fresh pork thoroughly. Pressure cooking shortens cooking time but often results in greater shrinkage compared with braising or simmering. Frozen pork may be thawed or cooked frozen.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When your geriatric patient gets bored with eating . . .

it may well be that mealtime has become something "to get over with" rather than a pleasurable pastime. Introduction of a variety of foods and new menu interest can often play a big part in bringing a balky patient back to the table. Gerber offers 4 Cereals, over **65** Strained and Junior (minced) Foods to give you greater latitude in specifying a well-balanced, nutritionally-sound diet. PLUS:

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INSTITUTIONS

Vol. 38, February, 1956

- * Good personnel relations insure the future. V. W. Eimicke.—p. 7.
- * Breaking the breakage habit.—p. 8.
- * Progressive kitchen planning.—p. 9.

Roast-poaching turkeys.—p. 32.

Low moisture fruits for menus.—p. 54.

- * Evaluates electric lamps on basis of performance, cost, maintenance. L. V. James.—p. 82.
- * Food costs determine success of operation. P. Dukas.—p. 110.

Good Personnel Relations. Develop a well-rounded program for employee selection. Attract to your field those individuals who can grow with you and have the potential for future leadership. Look for ethical, sincere, and public-service-minded personnel. This will give the organization a personnel force which is better equipped to interpret policies and do a sound job. A formal training program will have real value, but only if it is followed by a day-to-day training program. Develop skills of supervision, but remember that no amount of principles and applications are of much value unless there is a genuine desire to treat everyone with honesty and sincerity.

Breakage Control. Before blaming employees for a high breakage rate of dishes, ask yourself if you have provided them with the right tools, training, and supervision. Have dishes been selected for maximum-use potential? Make every effort to standardize on types, sizes, and weights. Second, examine the dishwashing layout. A well-planned layout which includes modern equipment is essential to breakage control. Let equipment take the place of human hands wherever practical. In large operations where dishwashers are standard equipment, the auxiliaries—racks, carts, tables—will contribute much to breakage control. Don't skimp on dishwashing performance to reduce handling. Make your objective clean, sanitary dishes at the lowest net cost.

Kitchen Planning. In this first of a series of articles, a rectangular kitchen of 1200 sq. ft. floor area, which is designed to serve 250 persons, grows from a preliminary planning stage by adding a cold room, general and vegetable stores, and a vegetable preparation area.

Evaluating Electric Lamps. This article guides the institution manager in selecting lamps for a given purpose and location. Descriptive and performance data are given in tabular form for fluorescent and incandescent lamps most commonly used in institutions and included is a comparative cost analysis of ten lamps of each type burning for one year of 3000 hr. (50 weeks of 60 hr. each). Brief descriptions of lamps which are also used by institutions—colored lamps, both for utility purposes and for decoration; floor, table, and wall lamps; silvered bowl lamps; reflector and projector lamps; circline fluorescent lamps; and health lamps—are also included.

Controlling Food Costs. A competent food service operator must first know how to plan a profitable menu. This involves a careful study of sales information so that the menu will reflect popular items. Having determined the desirable items, a method of rotation must be determined to avoid listing the same items each day. A basic rotation pattern to insure an equitable load on kitchen equipment and kitchen personnel also is worked out. The day must be considered (e.g., Friday, fish; Monday, less volume; Sunday, family patrons; holidays, and so on), the time, the weather, quantity, quality, size, grade, the market, the season, refrigeration, inventory, and the price. Having planned a profitable menu, the food service operator can then concentrate on purchasing. Specifications for all food items should be designed to fit the requirements of an individual operation; there is no point in buying the best grade of celery for chopping, for example. Receiving and storing are the next responsibilities; the first step here is verifying the quantity, quality, size, weight, and number of food items received. After the items are checked, they must be stored promptly and efficiently. Issuing must be controlled and storerooms kept locked—goods issued only by requisition.

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potatoes are steam cooked the economical *Steam-Chef* and Steamcraft way . . . in addition, other vegetables, meats, fish, fowl and desserts are also cooked with steam.

Potatoes prepared the *Steam-Chef* or Steamcraft way are cooked without loss of valuable nutrients. No heavy pots to handle—no burning or scorching—your diners are assured of savory, palate-tempting potatoes at every meal.

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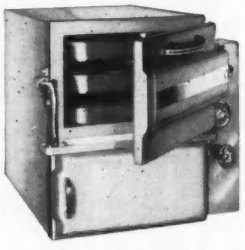
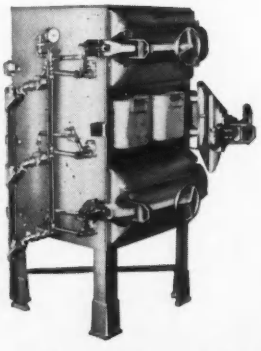


STEAMCRAFT—2 compartment —counter-top utility steamer.



STEAM-CHEF—3 compartment heavy-duty steam cooker.

THE MODERN HOSPITAL

Vol. 86, February, 1956

- * Good food starts with good management. J. W. Stokes.—p. 112.

Hospital Food Management. Hospital food service has tended to lag behind in the march of progress. One

Meat...

and Energy While Reducing

Whatever the origin of obesity, a foremost consideration in any weight reducing program is the establishment of a negative caloric balance by means of an acceptable low-calorie diet which does not produce inanition, irritability, or personality changes.* A reducing diet which does not require renouncement of customarily used foods and which provides sufficient nutrient energy for sustaining vigor, increases the chances for permanent adjustment in food habits. Only by such permanent habit change can normal weight be maintained once it is reached by dieting.

Clinical experience shows that the best diet for reducing is a normal diet modified by reduction in portion size of certain foods rather than by their elimination. Desirable and necessary foods in the "ideal reducing diet" include "meat, poultry, fish, eggs, milk and other dairy products, leafy green and yellow vegetables, citrus fruits, and enriched and whole grain products."*

Lean meat, providing, as it does, important amounts of top quality protein, B vitamins, and essential minerals, is recognized as a valuable food in the reducing diet, as well as in the maintenance diet following a reducing program. It supplies only a moderate quantity of calories as food energy, it has great satiety value, and it provides energy relatively slowly, thus contributing to a sense of well-being and vigor.

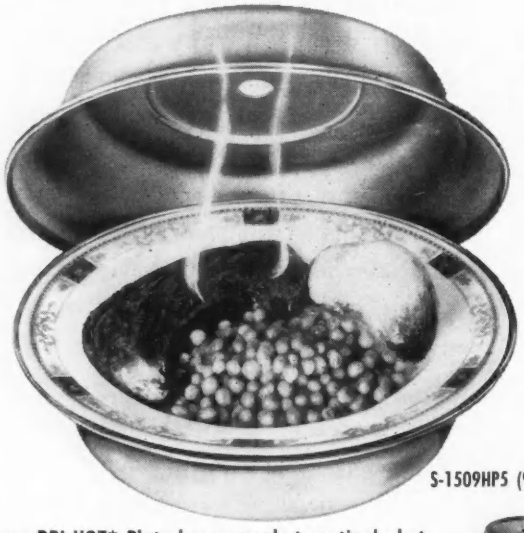
*Berryman, G. H.: Obesity—A Brief Review of the Problem, Metabolism *3*:544 (Nov.) 1954.

The nutritional statements in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

American Meat Institute
Main Office, Chicago...Members Throughout the United States

possible reason is the emphasis placed on therapeutic rather than nutritional function of food. Lack of an effective system of cost control has produced high dietary costs. Faced with the need to raise standards and reduce costs, many hospitals today are employing food service managers to handle the commercial side of dietary service while the dietitian devotes her energies to nutrition and therapy. When an administrator decides to engage a food service manager, it is important that lines of authority be sharply defined between the food service manager and the executive dietitian. All areas of action need to be clearly marked out so that employees are adequately trained and supervised. A new trend in hospital food service also is the employment of outside caterers to handle food service to patients and employees. Administrators using this plan feel that they have been relieved of many of the "headaches" of dietary service. Efforts are also being directed toward new and better means of getting the food from the kitchen to the patient. Many hospitals have installed various types of centralized food service. Food is served in the kitchen under the watchful eye of a supervisor, placed on trays, and conveyed in insulated trucks or containers directly to patients. The food is not subjected, in this way, to the adverse effects of excess heat in the trucks which convey food in bulk to the floor pantry in the conventional or decentralized method.

serve hot foods HOT this easy way...



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Available to fit tray plates 7¾" to 9¾" O.D.

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Heat the special cast alloy DRI-HOT disk in a 450-degree oven for 15 minutes.
Place the heated disk in the stainless steel plate holder, with handle provided.
Set the china plate with the complete hot meal in the holder.
Put on the stainless steel cover and your meal is ready for Room Service or Hospital Tray.

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PIONEERS IN STAINLESS STEEL

PERSONNEL JOURNAL

Vol. 34, February, 1956

* How top-rated supervisors differ from the lower-rated. L. Tarnopol and J. Tarnopol.—p. 331.
* Accidents and the "human factor." A. McLean. —p. 342.

Top-Rated Supervisors. A good supervisor takes the initiative in establishing smooth personal working relations. He tends to be even-tempered, consistent, and friendly, taking a personal interest in his men. He does not need to use his authority to maintain discipline. He is also known as dependable and is willing to "go to bat" for his employees. He is seen by his employees as well qualified for the job; he is able to get things done; he is precise and clear in his instructions. He encourages employees' participation in deciding on deadlines for work completion, especially on routine work. The good supervisor is careful not to give the impression of snooping, but rather of being personally interested in the employee's progress. A poor supervisor is either too withdrawn or too aggressive to maintain consistent and constructive employee relations. He generally spends less time in planning than the good supervisor. He is either completely passive, so that each worker sets his own pace or the deadlines are set by pressures from outside the group so that the pace demands real effort and produces considerable tension. In most cases, team spirit is adversely affected by either the passivity of the supervisor or by the undue pressure he exerts. He is unable to build a solid group structure because he is often physically absent from the group or is withdrawn from contact with them by using an intermediary.

Accidents. Whatever the immediate conditions of a series of accidents, they always occur in a setting of human feelings and human motivations. An understanding of some of these feelings and the emotionally charged situations involved in accidents may give us clues to better methods of presenting safety material. The greatest natural aid in any such educational campaign is the individual's basic desire to behave as a mature, well balanced person. As the less mature individual is much more ripe for accident in the injury-provoking situation than is his more stable counterpart, safety campaigns must be directed primarily to the immature, unstable worker. In doing so, we must employ broad principles of mental health. Dogmatic methods of teaching are unsatisfactory for conveying emotionally-powerful ideas which are inherent in personal, physical safety because the accident-prone individual, impulsive and irresponsible in general, has feelings of resentment toward people in authority. Instead of stimulating hostility, ideas of emotional importance should be presented by indirection—through films, skits, or by role playing. The safety trainer must carefully avoid moral judgment. The power of suggestion present in lurid posters, for example, must also be recognized as dubious means for promoting safety when such means are directed toward an immature group.

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TRADE-IN ALLOWANCE FOR OLD TOASTERS!

...up to $17.50 allowance for old waffle bakers!

Old equipment costs you money—retire it now while it's worth real cash on new models!

Turn headaches into profit while you can! Here is your opportunity to start enjoying the many advantages of efficient, up-to-date toasters and waffle bakers at a tremendous saving. Now—*before* repair bills mount up . . . *before* old equipment causes bottlenecks—*now* is the time to unload. And do it at a *profit!*

Regardless of age, make or condition, your old 4-slice toaster is worth $22.75 on a superb new "Toastmaster"* Powermatic model! Your old double-unit waffle baker is worth $17.50 on the purchase of a new one. And there are equally big allowances on other sizes and models. With bigger profits and real savings to be had, why wait? Call your dealer while these big allowances are still available!

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- New Superflex timer (most accurate ever developed) toasts fast when cold, faster when hot. Toast is always perfect.
- Automatic voltage compensation assures the same golden-brown toast every time, whether voltage is on high or low side.
- "No levers to press" saves time and labor, cuts wear and tear to an absolute minimum.

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- Specially treated grids prevent sticking.
- Color dial for light, medium or dark waffles.

Toastmaster Bun Toaster

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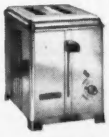
4-slice Powermatic $134.50†



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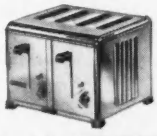

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RESTAURANT MANAGEMENT

Vol. 78, February, 1956

* Making better use of electric cooking equipment. A. W. Dana.—p. 45.

Using Electric Cooking Equipment. Every kitchen can benefit from the flexibility and versatility of electric cooking equipment. For baking pastries, browning crumb-topped sauce foods, and roasting meats, control of both top and bottom heat in electric ovens is possible. Heavy-duty broilers save valuable space. Broiling capacity is doubled by a double-deck arrangement of two separate units which are further supplemented by a standard-size oven underneath. Electric booster water heaters preheat cold water for coffee brewing. Infra red lamps successfully roast beef, hams, and turkeys. Electric toasters are versatile if placed on portable stands. A lift-up heating element and removable fat container are features of the new electric, deep-fat fryers. These elements quickly offset the chilling effects of frozen or refrigerated breaded fish and meat. The fat container is easily lifted out, emptied, and strained. Electric range tops can be used for top-of-the-stove cooking or as griddles. Automatic coffee-makers save labor and insure uniform fresh coffee with minimum leftovers. High compression cookers, electrically controlled, will cook meats and vegetables in one-half to one-quarter the time required by ordinary means.

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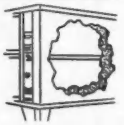
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WHAT'S NEW IN HOME ECONOMICS

Vol. 20, February, 1956

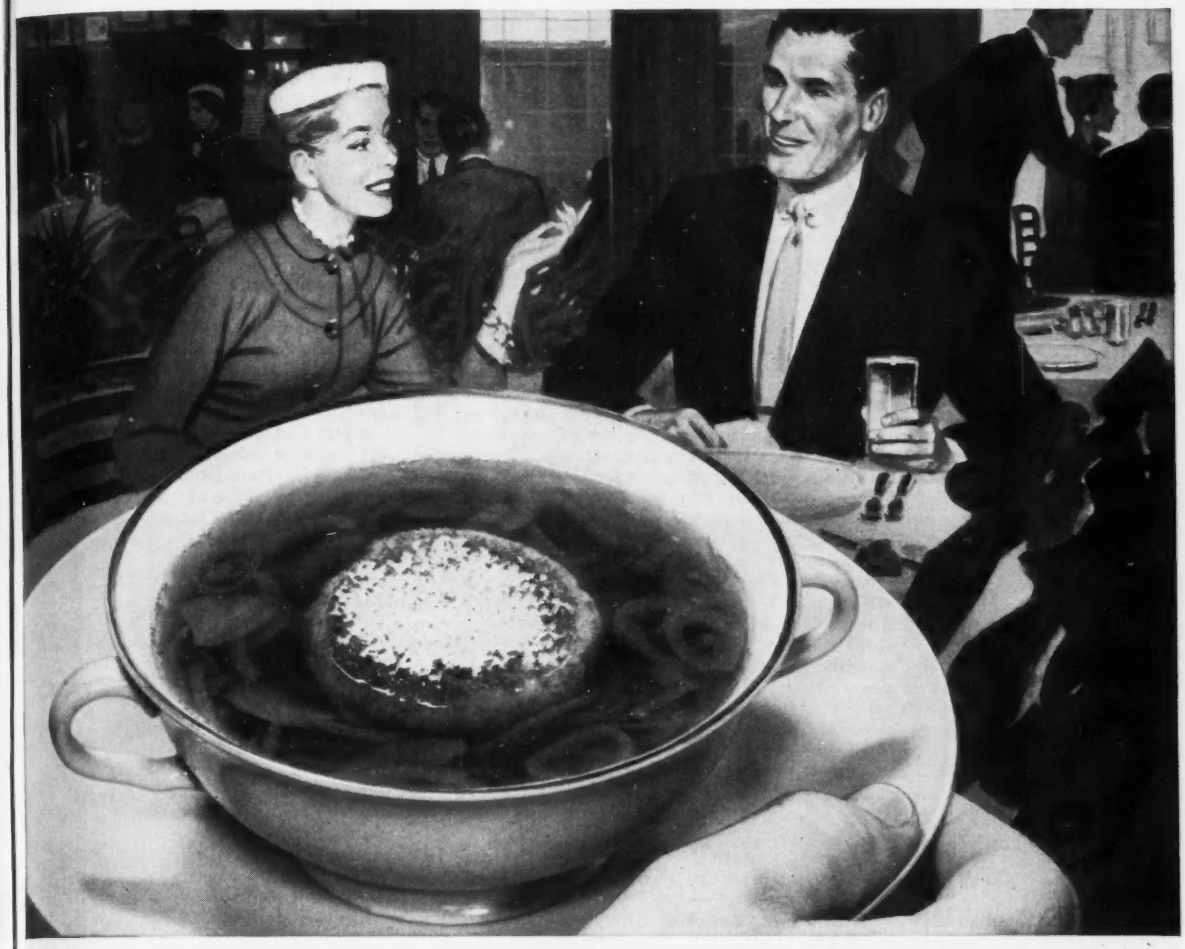
Teaching foods by the meal-planning method?

* Survey shows advantages.—p. 72.
* Points to problems and perplexities.—p. 73.
* Teaching foods must include these three essentials.—p. 74.

Advantages of Meal-Planning Teaching. A recent survey shows that an overwhelming majority of teachers use the meal-planning method of teaching foods. They feel that this method offers the opportunity for closer correlation to real-life situations. This method is basic and includes all phases of foods—nutrition, dietetics, and table service. It teaches students to look on individual foods as part of the day's diet—not just to satisfy immediate hunger. It interests students, for both boys and girls take more pride in preparing a complete meal. It helps teach solutions to home problems, since students must learn to do one job at a time just as they would have to do when running a home. Students are introduced to new foods which they would not eat otherwise.

Disadvantages. The element of time was stressed as a disadvantage in the meal-planning method of teaching foods. Successful meal-planning requires adequate time for laboratory meal preparation; effective teaching is impossible when large classes must be handled in short laboratory periods. Thus the basic skills are often slighted. Preparation of difficult foods must be taught and handled separately. Group preparation of meals is also more expensive than is individual food preparation, and space and equipment is often limited. In all, physical set-up was noted as a limiting factor in the effective use of meal-planning in the teaching of foods.

Three Essentials in Teaching Foods. Whatever the method of teaching, the real objective in family-centered teaching of foods must include three essentials: (a) students must learn how to cook foods skillfully; (b) they must know how to plan meals correctly; and (c) they must be able to prepare and serve meals properly. The first aim, therefore, is to make sure that all to whom we are teaching foods know how to cook skillfully—a fundamental to happy, enjoyable family meals. Having acquired the ability to make a basically simple product, the student can then apply that same knowledge to other similar foods. Moreover, when students learn to prepare successfully a few recipes, they have a feeling of satisfaction which arouses their interest. Fulfillment of the second essential means teaching how to combine well-prepared, nutritious, and appetizing foods. In addition, time management must be taught, and the ability to serve hot or cold meals so that they are just that. The third essential is the culmination of the accomplishment of the first two. Here is where we should face squarely the one real goal—to so inspire students so that they gain a never-to-be-forgotten vision of the part that family meals can and do play in family living.



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Distinctive flavor! So authentic and different because Le Gout Onion Soup Base is processed with such infinite care. The rich base is delightfully seasoned and the carefully selected onions are sautéed in chicken fat to give you the superb flavor that your customers will remember.

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News Notes

2nd International Congress of Dietetics. Captured by the spirit of *II Congrès International De Diététique*, we wish to report that *informazione* concerning the event reflects high promise of a stimulating and unique experience for those who are fortunate enough to attend.

By mid-February, over thirty A. D. A. members were making arrangements for their trip to Rome and twice as many had expressed an interest in going overseas. The official representative of the Association will be Winifred Howard Erickson, President.

As time passes, an ever-increasing number of familiar names is appearing on the provisional program. Some of them will be published later, after confirmation. During the opening session, Dr. Margaret A. Ohlson, Chairman of the International Interim Committee, will extend the greetings of the many national dietetic associations.

Sharing in a symposium on obesity will be Dr. Charlotte Young, Associate Professor of Medical Nutrition, Cornell University. Alice H. Smith, Chief Nutritionist of the Michigan Department of Health is scheduled to speak on the "Educational and Social Aspects of Malnutrition in Relation to Tuberculosis."

Proving that the proclivity to use lengthy titles is universal, a session on 11 September from the hour of 15.00 to 16.05 is called "Principles of Planning and Management in the Production of Nutritious Meals for Groups of People." During this period, Mary Northrop, Director of Dietetics, King County Hospital System in Seattle, will discuss the "Principles of Layout for the Operation of a Food Service and Their Elaboration to Suit Different Situations."

An entire morning will be devoted to child feeding programs; and Eva H. Ylvisaker, Director of Dietetics, Children's Hospital, Cincinnati, will share the platform with five other authorities from several countries.

Dr. E. Neige Todhunter, Dean, School of Home Economics, University of Alabama, will participate in 13 September's session on "The Contribution of the Dietetic Profession to Better Nutrition."

Inasmuch as tempus is fugiting, you are urged to make your travel arrangements and to write to the Headquarters office for hotel and tour reservation forms.

Facciate un buon viaggio.

39th Annual Meeting Plans. "Even better" than the outstanding presentations at the last meeting in St. Louis is the aim of the Program Planning Committee of the 39th Annual Meeting, to be held October 9 through 12 in Milwaukee. Busily engaged since last fall, the committee has been planning lectures, panel discussions, and conferences with such variety that members will find topics of vital interest during each of the four days. Authorities in fields related to dietetics and nutrition have been invited to speak on both the specific topics and broad fields. The conferences will enable members to find solutions to on-the-job problems.

Local arrangements are being directed by Dorothy Belknap, Chairman, and Ruth Humboldt, Co-Chairman. Miss Belnap, who was on the hospitality committee for the first meeting held in Milwaukee in 1938, is with the Milwaukee County Hospital Dispensary Emergency Unit. Also very active in Association activities, Miss Humboldt is the Director of Dietetics, Muirdale Sanatorium, Milwaukee.

The Hotel Schroeder, which in 1938 was the scene of the sessions and exhibits, will serve again as the headquarters hotel. Both Milwaukee's Auditorium and the recently constructed Milwaukee Arena will be the site of this year's sessions and exhibition.

A.D.A. Workshop for Dietetic Internship Directors and Staffs. A workshop for dietetic internship directors and staff was held February 12 to 15, 1956 at Robert Allerton Park, Monticello, Illinois. This workshop, the first of its kind, was a cooperative project of The American Dietetic Association and the University of Illinois. Attendance was gratifying in that there were 77 registered, representing 47 of the 69 dietetic internships.

The objectives were two-fold; the discussion of effective learning experiences for the dietetic intern and the discussion of academic requirements for entrance to a dietetic internship in relation to the new academic requirements for membership in the Association.

In addition to the discussion groups, the program included addresses by Dr. Robert B. Browne, Dean, and Dr. Homer Gammill, Professor of Industrial Psychology, Division of University Extension, University of Illinois. Dean Browne spoke on "Education as Related to the Professions" and Dr. Gammill's topic was "What Should the Intern Expect from the Director?" Dr. Gerald Carter, also of the Division of University Extension, assisted with the organization of the workshop and demonstrated problem solving and training techniques. Frances MacKinnon, School of Public Health, University of North Carolina, spoke at one of the evening sessions on "The Dietitian and the Community."

The faculty of the University of Illinois, Home Economics Department, assisted with the program and local arrangements, and the members of the Eastern Illinois Dietetic Association were hostesses at a coffee hour preceding the workshop.

Training for Food Service Supervisors. In March, the first program of its kind for training hospital food service supervisors began at Michigan State University. Co-sponsored by the Michigan Hospital Association, the Michigan Dietetic Association, and the University, the course is offered through the University's Continuing Education Service and will be directed by Margaret Gillam, former Dietetic Specialist of the American Hospital Association.

A carefully planned, ten-week course of intensive training will be geared to the needs of the individual students, with much of the instruction given by specialists from the University's faculty. Subject matter areas to be covered include: basic principles and practices in food production and administration, nutrition, purchasing, personnel problems, sanitation, safety, accounting, menus, planning, and ethics.

Future Meetings. On March 22 and and 23, in Boston, the Florida Citrus Commission sponsored a *New England Conference on Human Nutrition*. Outstanding leaders were chosen to make reports on the state of the nation's health and to discuss ways of improving nutritional health, especially in New England. The audience included opinion leaders in various lay fields of interest. The New England conference may be followed by others in different parts of the country.

The *10th Community Nutrition Institute* of Syracuse University and The New York State Department of Health will be held June 17 to 30, at the University. Focal point of the Institute will be a family-case study presented and discussed by a panel composed of those concerned with the health and development of the family. Three hr. of graduate credit may again be earned.

June 26 to 29 are the dates of the Annual Meeting of the *American Home Economics Association* to be held in Washington, D. C.

The *Canadian Home Economics Association* will meet in Vancouver, B. C., July 9 to 12.

A second *Symposium on Foreign Chemicals in Foods*, organized by the Netherlands Association for Nutritional Research, under the auspices of the Commission Internationale des Industries Agricoles and the Bureau International Permanent de Chimie Analytique will be held in Amsterdam, July 9 to 11. Information may be obtained from Miss E. W. Waller, Assistant Secretary, Henry Polaklaan 42, Amsterdam (C).

Vitamin Symposium. On March 6, in New York City, the University of Texas and The National Vitamin Foundation cosponsored a "Symposium on Vitamin Metabolism." The program included:

"Some Considerations on the Metabolism of Vitamins"—Dr. Severo Ochoa, New York University-Bellevue Medical Center

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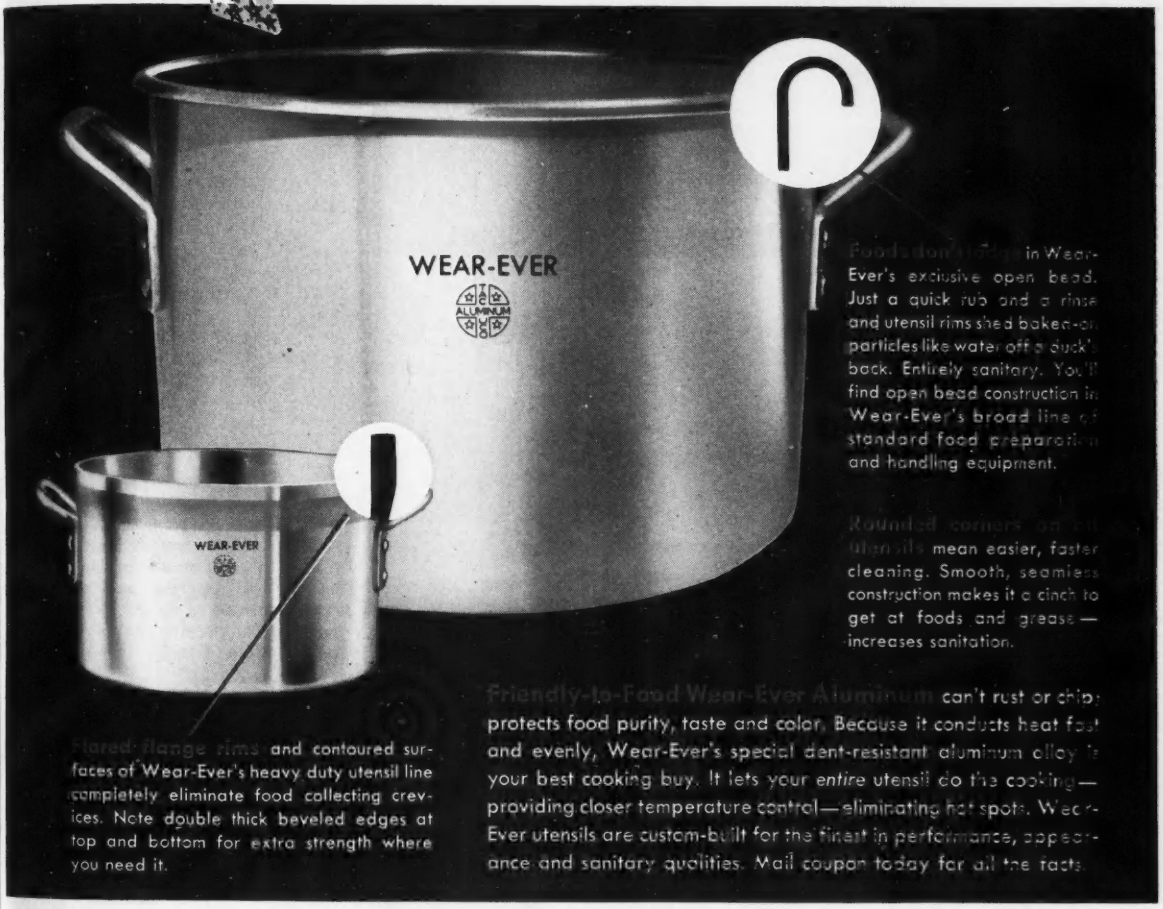

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"The Metabolism of Niacin"—Dr. L. M. Henderson, University of Illinois, Urbana

"The Metabolism of Vitamin B_6"—Dr. Jerard Hurwitz, National Institutes of Health, Bethesda, Maryland

"The Metabolism of Pantothenic Acid"—Dr. G. M. Brown, Massachusetts Institute of Technology

"The Metabolism of Folic and Folinic Acids"—Dr. C. A. Nichol, Yale University

"The Metabolism of Ascorbic Acid"—Dr. J. J. Burns, New York University *and* National Institutes of Health

"The Metabolism of Biotin"—Dr. Lemuel D. Wright, Sharp & Dohme, Division of Merck & Co., Inc., West Point, Pennsylvania

More DuBois Dietetic Scholarships.—The T. V. DuBois Foundation has announced five new Scholarships for the year 1956, which will go to the state dietetic associations in Alabama, Florida, Louisiana, North Carolina, and Michigan, plus a special grant to The Ohio State University for research in the field of dietetic administration. This scholarship plan, first proposed to the Foundation in 1953 by the Cincinnati Dietetic Association, has thus far benefited twenty-five states. The Foundation is in a position to consider additional applications for 1956 from state associations, and applications for 1957 (deadline of November 30, 1956) may also be made at this time to John M. Welch, Secretary of the Scholarship Committee of T. V. DuBois Foundation, 1120 West Front Street, Cincinnati 3. Preference is given to the applications of state associations which have not previously received scholarships.

These Scholarships are outright grants in cash made to state dietetic associations for the use of qualified students who, for financial reasons, would otherwise be unable to complete an approved dietetic internship.

Dietitian Most Popular Professional Woman. At Brooke Army Medical Center, Ft. Sam Houston, Texas, patients recently chose by popular vote the "Professional Woman of the Year" for the hospital. Lt. Maryland Olson, dietetic intern, who had been nominated by other dietitians, was chosen for this honor in competition with three nurses, an occupational therapist, and a physical therapist. This popularity contest is held annually.

Dr. Ohlson to Fill New Post. An announcement from the State University of Iowa tells of the appointment of Dr. Margaret A. Ohlson as Professor and Head of Nutrition at the University Hospitals effective July 1. Dr. Ohlson, currently head of the Department of Foods and Nutrition, Michigan State University, is a Past-President of A.D.A., and is Chairman of the Interna-

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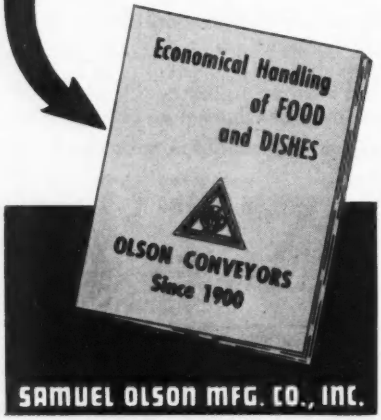

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tional Interim Committee of Dietitians which is planning the program and arrangements for the Second International Congress of Dietetics to be held in Rome, September 10 to 14. Dr. Ohlson, will succeed the late Dr. Kate Daum in her new work.

Summer Institute. Iowa State College, Ames, will offer this year an Institute in Human Nutrition from June 13 to 23, which will provide opportunity to earn two graduate credits. The discussion which will cover food use, nutritional needs and nutritional state of children and adults, is being planned for: public health workers, extension specialists, school lunch workers, dietitians, and nutrition educators in schools and industry. A folder describing this and other summer courses at Iowa State is available on application from Dr. Ercel S. Eppright, Head, Food and Nutrition Department, Iowa State College, Ames.

Plentiful Foods — MONTHLY LIST

The following list of foods expected to be plentiful during April has been released by the Agricultural Marketing Service, U.S.D.A.

Protein foods

Beef
Chickens—broilers and fryers
Milk and other dairy products
Pork

Other foods

Cherries, canned and frozen
Dates, fresh
Grapefruit
Lard
Peanut butter
Potatoes
Rice

A.H.A. Citation. The occasion of attainment of 500 million members of Blue Cross plans throughout the U. S. was noted on February 13 by the Health Information Foundation, when it presented a citation to the American Hospital Association in recognition of this achievement. The A.H.A. was commended for its role in pioneering the development of Blue Cross; fostering the continual extension and improvement of voluntary health insurance and promoting health insurance protection in the U. S.; bringing to more of the population in the U. S. and Canada the benefits of medical science and the advantages of hospital service; and promoting the public welfare by increasing the effectiveness of modern medical care. Presentation was made in New York City by Former President Herbert Hoover, Chairman, Citizens Advisory Committee, Health Information Foundation.

UNICEF. Fifteen per cent more children and mothers (32½ million) benefited from programs aided by the United Nations Children's Fund (UNICEF) in 1955 than in 1954. During 1956, an additional rise of 18 per cent is expected. The milk program of UNICEF has been one of its important projects. Milk imported by UNICEF to help child nutrition programs in many countries has proved a most effective stimulant to more lasting solutions. Today, 165 plants principally to pasteurize, sterilize, or dry milk have been authorized, of which 124 are in operation.

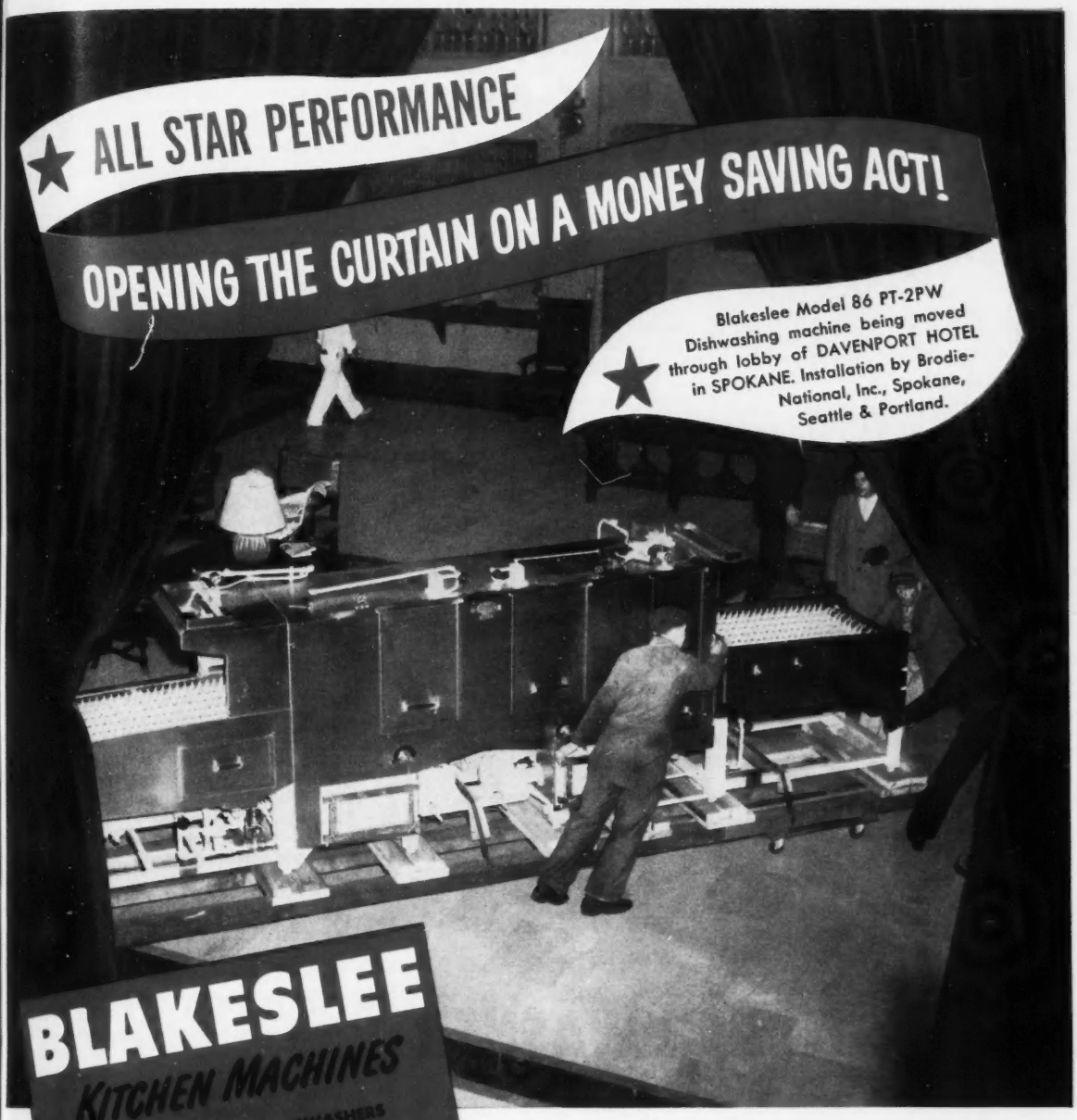
The majority of these plants, 135 of the total, will be devoted to the processing of fluid milk from the cow, buffalo, and the goat; 27 others will produce milk powder, and one each will process baby food, "vegetable milk," and "fish flour." When all are in operation, some 4 million children and expectant and nursing mothers will benefit from free or low-cost food rations supplied by the governments in return for UNICEF aid.

WHO Publication. "Expert Committee on Health Education of the Public—First Report" is the title of the World Health Organization Technical Report Series No. 89. It has been characterized by the National Health Council Committee on Health Education as "a significant statement of the principles and practices of health education."

The contents cover such topics as: objectives; scope of health education opportunities; the learning process; the role of the health education worker; evaluation in developing and operating a health education program; guiding principles in planning and implementing health education activities and in selection and use of methods and media of health education; training in health education of the public; and the WHO program of health education of the public.

Budgeting Booklet for Social Agencies. The United Community Services of Metropolitan Boston have recently issued a revision of "Guide for Estimating the Minimum Family Budget," which gives cost figures for items necessary to maintain health and an adequate standard of living. It was prepared for use by social workers, nutritionists, home economists, public health nurses, and other professional workers who help families with their economic problems. Sections are included on such subjects as: weekly food allowances, weekly grocery order for minimum allowance, suggested menus, and interpretation of food requirements. Figures are also presented for clothing and personal needs, utilities, and fuel.

Studies of Canned Vegetables. The Georgia Agricultural Experiment Station, Athens, recently issued the first three bulletins in a projected series concerned with quality-retail price relationships for processed vegetables. These first three bulletins, N.S. 13, 14, and 15, deal with canned field peas, canned turnip greens, and canned collard greens. Each reports a study of quality and prices of consumer goods available on the market, including such information as: quality of commercially processed vegetables offered Georgia con-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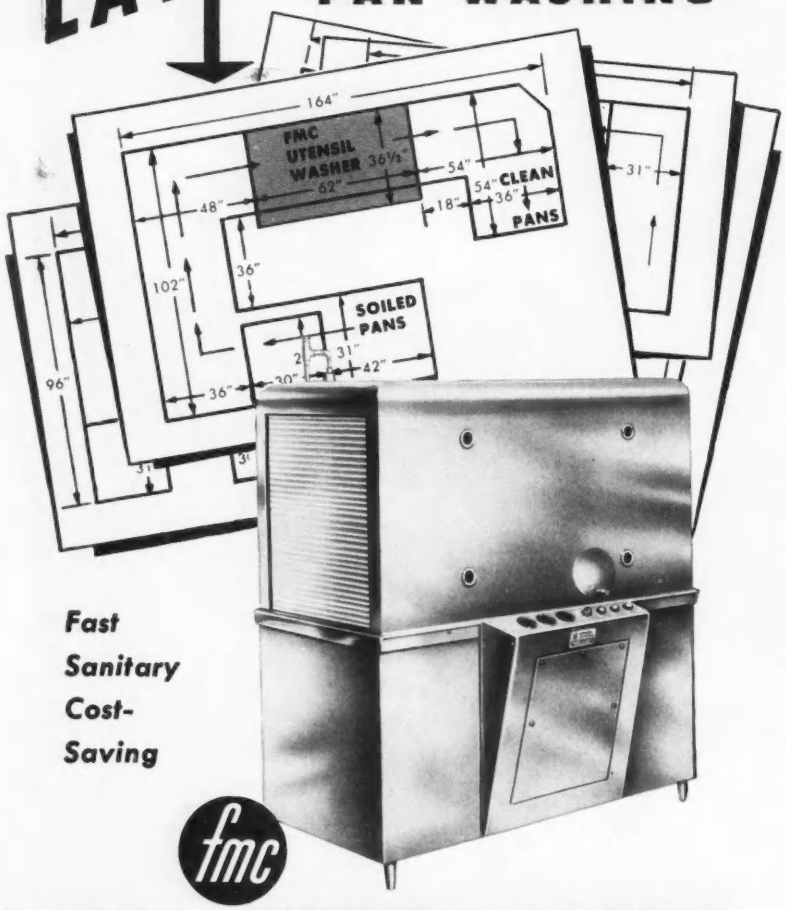

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sumers; prices paid in relation to grade and quality; and uniformity of vegetables processed under the same label or brand. It is interesting to note that for all three vegetables, retail prices as guides to quality were practically worthless. Additional studies now in process, for which reports will be released later, concern canned mustard greens and green snap or cut beans.

Personnel, Army Medical Specialist Corps. The following announcements concerning personnel have been made by the Army Medical Specialist Corps:

Promotion—2nd Lt. to 1st Lt.
Mary H. Coles
Reserve officers relieved from active duty
1st Lt. Emma J. Hann
1st Lt. Joanne M. McNally
1st Lt. Marily Pinsky
Separation—Regular Army
Capt. Jennie F. Quam

Oven Heights. Built-in ovens at the right height can save homemakers considerable energy and add to convenience, according to the U.S.D.A.'s Agricultural Research Service. Almost 70 per cent more energy is required to get a heavy roast in and out of an oven when the roasting rack is about 16 in. from the floor than when it is 36 in. above floor level. However, "eye-level" ovens in some new homes, with racks over 40 in. from the floor, are more energy-consuming and less convenient than those installed nearer waist level. Least energy, it was found, was expended when the most-used oven racks were 28 to 40 in. from the floor. It is estimated that about 25 per cent of newly constructed homes have built-in ovens.

Poultry Meat Color. Sometimes when poultry is thoroughly roasted, the meat remains pinkish in color. Research at the U.S.D.A.'s Western Regional Research Laboratory shows that certain substances in the atmosphere of any heated oven—or in the hot air over a wood fire or barbecue pit—react with traces of hemoglobin in the poultry meat to give a pink or reddish color. These are the same chemically as some substances used in the brining and smoking process that produces cured meats. How much of the poultry meat turns pink and how deep the color becomes depends on how hot the flame or heater is; whether the poultry roasts in an oven or covered pan or is covered with aluminum foil part of the time; the age of the bird; and the amount of fat in the skin. Because the thinner skin of young birds is more easily permeated with these substances, the flesh underneath may be noticeably pink. However, the pink color does not affect quality.

News of State Associations

Florida Dietetic Association. The *Miami Dietetic Association*, in cooperation with the Miami Heart Association, has sponsored a series of classes on low-sodium diets. Referrals are made by physicians through the Heart Associa-

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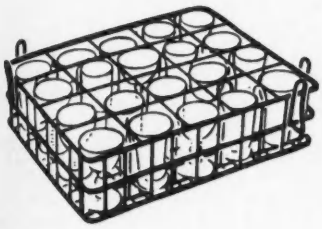
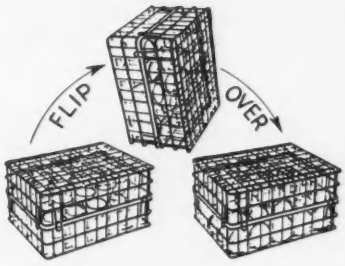
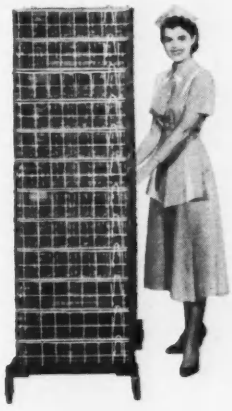


1. Glasses are placed in this 14" x 18" rack *Open End Up*, stacked and moved to dishwashing machine. An empty rack is placed over filled rack.



2. Both racks are flipped over and glasses slide safely into empty rack, open end down, ready for washing. Empty rack is removed and filled rack is placed in an open style Sani-Stack Rack and run through the dishwashing machine.



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tion. Classes have been open to both the patients themselves and the members of their families who do the cooking.

The *Tallahassee Dietetic Association* is sponsoring a weight control project, in cooperation with the Leon County Medical Association. At one of the Medical Forums on "How Your Weight Affects Your Health," Helen Cate, nutritionist, served as an expert panel member, along with four local physicians, who answered questions posed by the audience. A series of newspaper articles and radio programs on several aspects of weight in relation to health is also being prepared by the Tallahassee dietitians to further this project. If interest appears keen enough, a group of persons wanting to correct their weight may later be organized.

Illinois Dietetic Association. March 8 and 9 were the dates of the Illinois Dietetic Association meeting held in Chicago. The program was as follows:

"The Three-Way Life of Working Women"—Charlotte Adams, Housekeeping Editor, *Charm* Magazine
"Reaching for Quality Food"—Marye Dahnke, Director of Consumer Service, Kraft Foods Company, Chicago
"Forecast for Management"—Fern Gleiser, Professor of Institution Economics and Management, University of Chicago
"Recent Findings in Meat Cookery"—Marion Bollman, Quartermaster Food and Container Institute for the Armed Forces, Chicago
"In-Service Training"—Norman Bailey, Director, Grant Hospital, Chicago
"Selection and Training of New Personnel"—E. Virginia Pinney, Director, Dietary Department, St. Luke's Hospital, Chicago
"Staff Education"—Martha Moffit, Educational Director, Dietetic Service, VA Hospital, Hines, Illinois
"Psycho-Social Aspects of Child Feeding"—Abraham J. Simon, Ph.D., Director, William Healy School, Institute for Juvenile Research, Chicago
"Reappraisal of Obesity"—Theodore B. Schwartz, M.D., Associate Professor of Medicine, University of Illinois, Chicago
"Diet as Related to Recent Findings in Diseases of the Gastro-Intestinal Tract"—Henry Necheles, M.D., Director, Department of Gastro-Intestinal Research, Michael Reese Hospital, Chicago

Indiana Dietetic Association. The winter meeting of the Indiana Dietetic Association was held on February 16. Dr. Donald Moore, Medical Director and Professor of Psychiatry, LaRue D. Carter Hospital, was the featured speaker. Title of his discussion was "Mental Health."

Maryland Dietetic Association. A JOURNAL Club has been formed by dietitians employed in hospitals and institutions on the Eastern Shore for the purpose of discussion of articles on some phase of dietetic administration which has appeared in this JOURNAL. The group plans to meet every other month.

Missouri Dietetic Association. Springfield will be the scene of the spring meeting of the Missouri Dietetic Association on April 13 and 14. Subjects to be discussed include: quality food production; cost control; supervision; and research problems. The special panel to discuss research will include: Dr. Ernestine Frazier, Professor of Home Economics in Charge of Research, Missouri University; Helen Starch, Barnes Hospital, St. Louis; and Dr. Francis Maple, physician, of Springfield.

The Community Nutrition Section of the *Southwest Dietetic Association* sponsored on February 29 an Institute for Nursing Home Operators in that section of the state. Topics discussed were: meal management, essentials in menu making, marketing and menus applied to patients, equipment, and personnel. Home economists and dietitians of Springfield provided the program.

New York State Dietetic Association. On February 14, members of the *Hudson Valley Dietetic Association* heard Dr. Raymond Harris, cardiologist, speak on "Relation of Nutrition to Cardiovascular Disease."

Dietitians of the *Albany* area in March entertained high school seniors at a special meeting on "Horizons in Dietetics." A panel, including a dieti-

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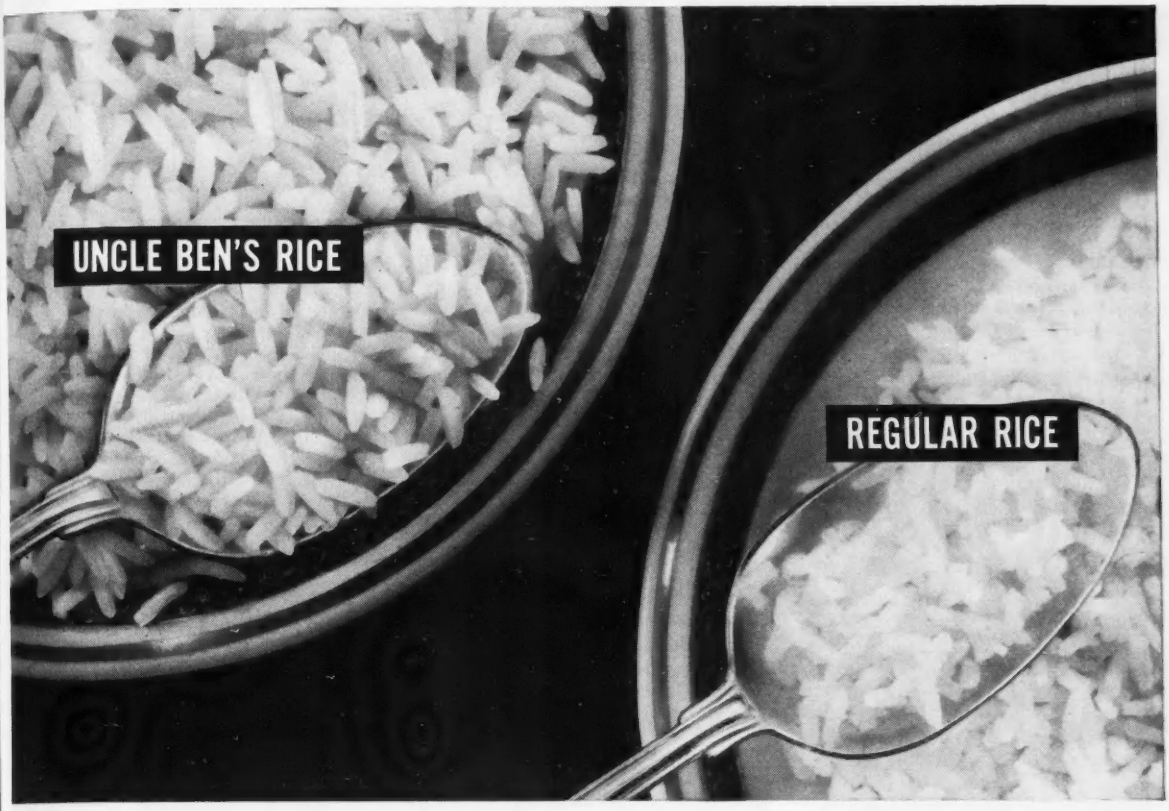

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Send me a free sample of Uncle Ben's Rice and a special set of quantity recipe cards.

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tian, nutritionist, extension worker, and homemaker, shared experiences, encouraging the guests to consider the field of dietetics.

In June, the *Central New York Dietetic Association* will sponsor an exhibit on career guidance at the annual Health Conference to be held at Lake Placid. The same exhibit will be shown a second time at the Syracuse State Fair early in September.

Oklahoma Dietetic Association. On January 30, members of the Oklahoma Dietetic Association, Oklahoma Medical Association, and nurses and students of the University Medical School heard Dr. Alexander Marble, Boston diabetes specialist, discuss the relationship of the doctor, dietitian, and nurse to the patient, his diet, and well-being as a whole person. The Oklahoma Dietetic Association sponsored the meeting.

On March 16 and 17, the Oklahoma Dietetic Association held its annual spring convention in Oklahoma City. The program included:

"Food Research"—Dr. Gladys Vail, Head, Department of Foods and Nutrition, Purdue University, Lafayette, Indiana

"The Dietitian as a Person"—Marguerite Pettee, University of Colorado Medical School, Denver

"Mental Health"—Dr. Louis J. West, Professor of Psychiatry, University of Oklahoma School of Medicine

"Food Cost Control"—Joseph O'Leary, Division of Hotel, Restaurant, and General Institution Management, Michigan State University, East Lansing

"The Most from Our Personnel"—Patricia Beezley, Manager, Pennant Cafeteria, Topeka, Kansas

"Your Career and You"—Florence Lanford, Texas State College for Women, Denton

Pennsylvania Dietetic Association. On January 19, the Professional Educational Section of the *Philadelphia Dietetic Association* presented a panel discussion on "Getting Ideas Across." Miriam G. Kemp, Director, Home Service Bureau, American Stores, contributed valuable suggestions for television demonstrations of food, pointing out the importance of appearance and simplicity of dress for the demonstrator, as well as providing tips on color and make-up of the demonstration, including ways of arranging food to best advantage for appearance, shape, and texture and methods of giving food the appearance of being hot or cold and fresh. She recommended the use of plastic dishes because they are more quiet than china. Other panelists discussed the problems of "getting ideas across" through journalism and photography. In February, the Philadelphia dietitians heard Mildred Hearn Mead General Foods Corporation, speak on "What the Dietitian Should Know about Frozen Foods." She traced the development of the frozen food industry in the last quarter century and told about continuing research now being conducted. A film was shown on planting, harvesting, processing, and delivery of frozen food.

Wisconsin Dietetic Association. The Food Administration and Diet Therapy Sections of the Wisconsin Dietetic Association are developing a bulletin planned primarily for hospitals in the state which do not have the services of a dietitian. The responsibility for printing and distributing the bulletin will be assumed by the Wisconsin Hospital Association.

The Community Nutrition Section, as one of its projects, is giving dietary assistance to homes for the aged throughout the state. They are also cooperating with the *Milwaukee Dietetic Association* in developing a series of classes on "Consumer Information on Food Buying."

Association Activities

State Meetings. A.D.A. representatives are attending the following state dietetic association meetings:

March 5, Doris Johnson, Maryland Dietetic Association, Baltimore

April 3–4, Bertha Biltz, Kentucky Dietetic Association, Lexington

April 3, Adelia Beeuwkes, Massachusetts Dietetic Association, Boston

April 5, Winifred H. Erickson, Iowa Dietetic Association, Des Moines

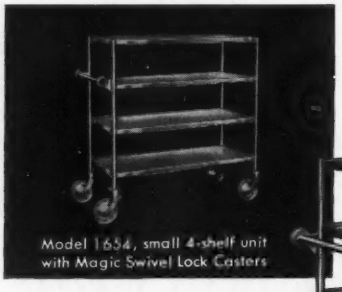
April 5–6, Adelia Beeuwkes, Pennsylvania Dietetic Association, Harrisburg

Another important addition to the J & J line of popular food service trucks

NEW J&J tubular

Frame Tray Trucks

Now available in the two basic sizes illustrated and in 4 or 5-shelf models. All types furnished in either stainless steel or standard painted finish.



Model 1654, small 4-shelf unit with Magic Swivel Lock Casters

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Specifications		
Model	1654–1655 (small size)	2654–2655 (large size)
Shelf Size	19¾" x 43¾"	23½" x 41½"
Shelf Clearance	(1654) 10¼" (1655) 7⅞"	(2654) 10¼" (2655) 7⅞"
Casters	*8" double ball bearing	*8" double ball bearing

*Customer is offered choice of 2—8" swivel and 2—8" stationary casters or 4 swivel casters with one caster at each end equipped with magic swivel lock. Either choice at no extra charge. Bumper handles and continuous rubber bumpers supplied at slight extra cost.

Smooth . . . from Start to Finish

Here's quality from every viewpoint; from the smoothly rolling 8" double ball bearing casters to the smoothly finished shelves and uprights. No rough edges, no sharp corners. Shelves are welded to uprights and then ground smooth. Shelf edges are turned down with center panel recessed. Tops of all uprights are covered by chrome plated plug buttons. Yes, they're designed throughout for smooth performance and long life. Order yours today.

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M & R Dietetic Laboratories, Inc., Columbus 16, Ohio

April 19–20, Martha Nelson Lewis, Michigan Dietetic Association, Detroit
April 20–21, Bertha Biltz, Indiana Dietetic Association, Indianapolis
April 26–27, Lucille Refshauge, New York Dietetic Association, Buffalo
April 27–28, Winifred H. Erickson, Ohio Dietetic Association, Cleveland
May 11, LeVelle Wood, Georgia Dietetic Association, Augusta
May 12, Ruth Dickie, North Dakota Dietetic Association, Fargo

New Recruitment Exhibit. A newly designed light weight exhibit is available for use in the spring career guidance programs. Titled "A Dietitian Can Choose A Career," it weighs slightly under 150 pounds, is 6 ft. 4 in. wide and about the same height including the metal legs which support it.

The exhibit, prepared with modern drawings and bright attractive colors, illustrates five general types of positions open to dietitians. Members interested in borrowing the exhibit may obtain full information at Headquarters office.

Display A.D.A. Materials. State meetings offer an excellent opportunity for acquainting our members and those of allied associations with materials produced by the A.D.A. The A.D.A. Publications and Reprints List, recently received by each member, provides titles and prices of materials pertaining to all fields of interest.

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WE BREW
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Everyone Enjoys
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In every walk of life everyone enjoys rich, full-bodied, invigorating CONTINENTAL COFFEE. Superb blending of the world's choicest coffees and precise roasting with automatic controls assure unfailing uniformity. Write today for a FREE trial package.
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Seattle, Washington

Mid-Winter Meetings. The A.D.A. Executive Board met in Chicago, February 16 and 18. The Coordinating Cabinet held its Mid-Winter Meeting February 17. The Council met February 16, at which time suggested agenda items for the House of Delegates and projects and problems as submitted by the chairmen of delegates from the respective states were discussed and reviewed for disposition. Adelia Beeuwkes presided at the Council Meeting.

A.H.A.-A.D.A. The Joint Committee Meeting of A.H.A.-A.D.A. met in Chicago, February 20. It was reported that the first class of students has begun its 10-week course in the Food Service Supervisor training program at Michigan State University, co-sponsored by Kellogg Foundation. The Education Coordinator is Margaret Gillam. This course was encouraged by the Joint Committee and supported by the state hospital and dietetic associations.

The shared dietitian program was reviewed, and it was the unanimous opinion of the Committee that local and state meetings of both the hospital and dietetic associations should promote this program.

A committee developing policies required for effective administration of the dietary department reported progress.

Hospital exchange plans were discussed with particular emphasis on the possibility of an exchange program for dietitians.

The recruitment activities for dietitians were reviewed, and a sub-committee is to be appointed to study and propose a recruitment plan to the Joint Committee.

A.D.A. Representative. Mary Reeves represented our Association at the Annual Meeting of The American Committee on Maternal Welfare in Chicago, March 11. A report will follow.

Additional A.D.A. Appointments. The following additions should be made to the list of appointments to committees as listed in the February issue of the JOURNAL, pp. 84–87:

Local Arrangements Committee
Ruth A. Humboldt
1570 Alice Street
Wauwatosa 13, Wisconsin

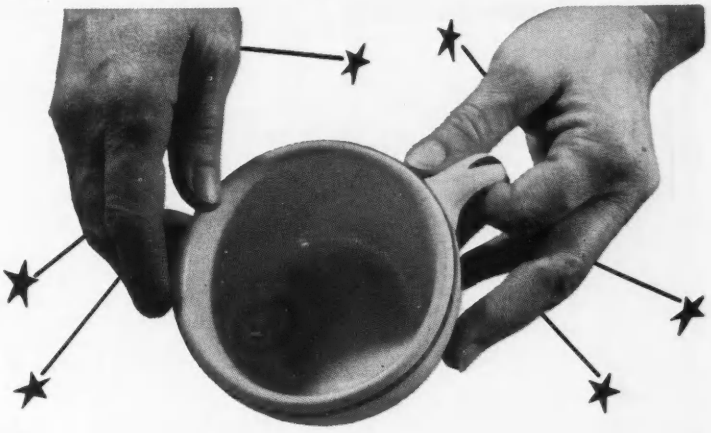
Dorothy Belknap
Milwaukee County Hospital Dispensary
Milwaukee 3, Wisconsin

National Health Council
Lucille Refshauge
Hartford Hospital
Hartford 6, Connecticut

American School Food Service Association
Marguerite L. Pettee
University of Colorado Medical School
Denver 20, Colorado

Local Health Departments. Anna de Planter Bowes attended as a guest the 8th Annual Meeting of the National Advisory Committee on Local Health

Do your employees complain that dishwashing takes



too long—hands get rough and red?

If they do, switch to rich-sudsing FAME—it's fast, but gentle!

FAME washes all tableware faster—pots and pans too! And FAME retains its effectiveness over long periods in any water—hard or soft, hot or cold. FAME *soaks* dishes to a shine in minutes! Even dried-on egg flushes free, to remain suspended in solution along with soils and grease. This high detergency cuts dishwashing time and costs; provides super-fast, spotless drying *without toweling!*

And FAME is pleasant to use. It's easy on the hands. It's pleasantly perfumed—no rancid soap odors. FAME's uniform white beads are easy to handle—never cake or lump. Your employees will *not* complain about FAME!

Save with FAME now! You buy your dishwashing compound by the pound, but you use it by measure. Don't be fooled by a lower price per pound. One hundred pounds of FAME completely fills a drum which holds from 250 to 350 pounds of ordinary dishwashing compounds. Get the complete economy story on FAME from your Wyandotte man today! *Wyandotte Chemicals Corporation, Wyandotte, Mich. Also Los Nietos, California. Offices in principal cities.*

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DIET CARDS

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Trays are easy to identify with these convenient 2¼" by 1¾" Diet Cards. Eleven standard diet subjects available, each on a different colored sturdy stock. Space allowed for patient's name, room and special notes. Write for samples and prices.

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Departments in New York City, February 1. Philip E. Ryan, Executive Director of the National Health Council, outlined the cooperation of the National Health Council members with the Committee and the interrelated development of local health councils and health departments. Case histories of five counties as well as discussion sessions brought out the importance of getting broad citizen support in efforts to improve local health services. Three basic steps in securing better health services are: (1) learning the facts about the community and getting the facts to the public; (2) involving all groups in the community in the betterment effort; and (3) maintaining public interest after the initial victory.

Obituary

Maude Forbes. The A.D.A. office has been notified of the death on February 7 of Maude Forbes, Chief Dietitian, Jackson Memorial Hospital, Miami, Florida. Miss Forbes came to Miami eleven years ago from Washington, D. C., where she had been on the staff of Gallinger Hospital.

News of Products and Services

Late in February, *Continental Baking Company* introduced in the Chicago and Milwaukee marketing areas its new "Staff Special" bread, designed especially for the geriatric market. It is made from a formula designed to provide in relation to ordinary enriched bread: 50 per cent more protein, more than twice as much iron, twice as much thiamine and niacin and riboflavin, and one-third more calcium. The recommended consumption of 6 oz. of Staff bread daily (about seven slices) will provide 19 gm. protein; 10 mg. iron; 246 mg. calcium; 1.2 mg. thiamine; 0.79 mg. riboflavin; and 9 mg. niacin. The formula for Staff bread, which is a white loaf, includes unbleached flour, nonfat dry milk solids, sugar, soya flour, butter, lactalbumin, wheat germ flour, salt, yeast, dough conditioner, lecithin, and calcium propionate. It is 10.8 per cent protein; 3.8 per cent fat; 44.1 per cent carbohydrates; and 0.19 per cent phosphorus. The bread has an exceptionally good flavor and should prove popular with the younger population, as well as "those over forty" for whom it was developed.

Mealpack Corporation has prepared a twenty-eight-page booklet on "Typical Convenience Meal Menus for Use with Model 11-E Mealpack Container." The collection of twenty-five menus is divided into four categories, according to food cost: 20–30-cent menus; 30–40-cent; 40–50-cent; and 50–80-cent. Specific instructions are given as to placement of food in the Mealpack containers. Brief instructions for operating the electric container are also presented. Menus are limited to "convenience" foods, i.e., ready-to-eat foods, canned, packaged, or frozen. Size of serving is specified for each instance.

The *Paper Cup and Container Institute* has prepared both a 4½-min. television film and a booklet called "Entertaining Made Easy," to stress the values of disposable paper service the year around. The film is built on a suggested Sunday or holiday brunch served in the home of a young couple. The booklet features twelve entertainment ideas with tested recipes for main dishes, desserts, salads and beverages, as well as tips on cooking and serving. Ten of these party ideas have year-round interest because they are for indoor functions, such as Sunday night buffet or Sunday brunch; get-together for the "boys"; dessert bridge; after theatre supper; and a children's party.

Metropolitan Wire Goods Corporation has introduced a Flip-Over glass rack the use of which is said to greatly reduce handling of glassware. Glassware is placed open end up—no need to empty the glass first. Racks are stacked and transported to the dishwashing machine, where a second rack is placed over the first. The compartments line up with each other, and when the racks are flipped over, the liquids run out of the glasses as they slide into the second rack in position for washing. The Flip-Over rack is placed inside any open rack and run through the dishwashing machine. The Flip-Over rack, which will accommodate both stemware and shell glasses in the same rack, is made of hammered steel strip, plastisol coated.

Dietetics along the banks of the Tiber

Now is not too soon to arrange for your trip to the

2nd International Congress of Dietetics

Rome, Italy
September 10–14, 1956

Share dietetics with the peoples of the world....
Discover how it is practiced in many lands....
Exchange ideas with representatives of every continent

For information and tentative program write:

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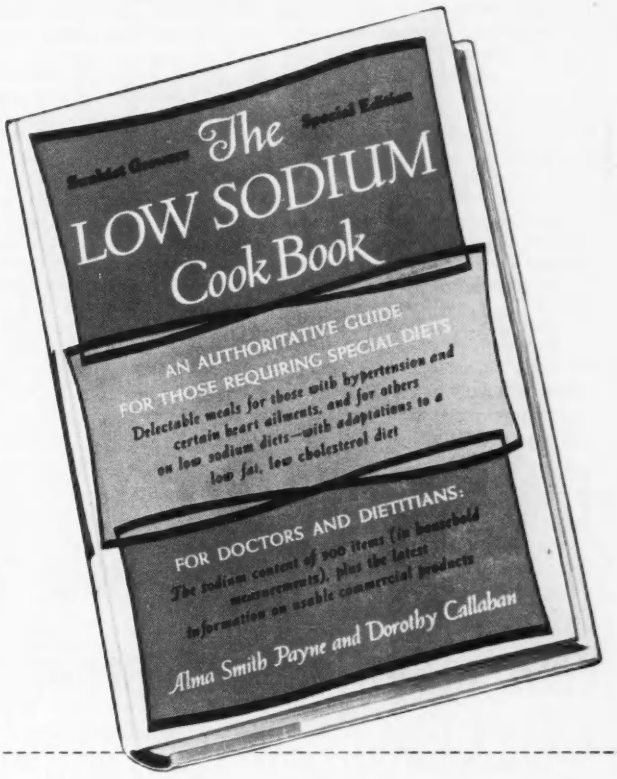
FAMOUS COOK BOOK* FOR LOW SODIUM PATIENTS

Nearly 500 pages of useful information, including:

- **tables of sodium, cholesterol and fat contents of 900 items in household measurements.**
- **how to follow doctor's instructions.**
- **how to accommodate the family to the diet.**
- **cooking with wines, herbs and seasonings.**
- **how to prepare meats, chicken, fish, vegetables, sauces, salads and salad dressings for the low sodium dieter.**
- **how to bake breads and desserts with low sodium substitutes.**
- **use of home freezer for the dieter.**
- **how to pack a low sodium lunch box.**
- **how to "eat out" on the diet.**

*By Alma Smith Payne and Dorothy Callahan, research dietitian, Massachusetts General Hospital, with introduction by Francis L. Chamberlain, M.D., M.Sc.D.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The LOW SODIUM Cook Book
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FOR THOSE REQUIRING SPECIAL DIETS
Delectable meals for those with hypertension and certain heart ailments, and for others on low sodium diets—with adaptations to a low fat, low cholesterol diet
FOR DOCTORS AND DIETITIANS:
The sodium content of 900 items (in household measurements), plus the latest information on usable commercial products
Alma Smith Payne and Dorothy Callahan

SO POPULAR WE'RE OFFERING IT ONCE AGAIN!

This is the third time Sunkist has made a special offer of The Low Sodium Cook Book—the widely-approved, practical guide on how to make saltless meals appetizing.

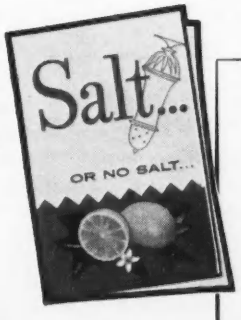
Once again this book, sold in stores for $4, is available through Sunkist in a special $1.25 edition. It's the same book except for a paper cover instead of cloth and an *added* section on fresh lemons.

Doctors tell us that lemons—as a seasoning substitute for salt—help solve the vexing problem of keeping low sodium patients on their diets by making unsalted food interesting.

You and your patients are invited to write for copies of the complete and authoritative guide to tasty low-salt menus while the limited supply lasts.

Medical Education Keeps America Healthy. Support Medical Education Week, April 22-28, 1956.

Free handy diet booklet! "Salt or No Salt," for distribution to patients on low sodium diets, is available from Sunkist. Please use coupon, and specify quantity. *You need not order The Low Sodium Cook Book to get these booklets.*



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It is also said to be eight times more resistant to shock, pressure, and friction. The Flip-Over racks are 14 by 18 in. and come in two heights, 4¾ in. and 6 in.

A polished chrome "Stanley Pitcher-Server" for institutional use has been placed on the market by *Landers, Frary & Clark*. The new pitcher-server is streamlined in design and has a full quart capacity. It has a stainless steel inner shell, a chrome plate over brass outer shell, chrome cover, reinforced chrome handle, and ribbed bottom for strength and rigidity. If a stationary stand is desired, a chrome plated bracket to hold the pitcher securely is available.

Attractively decorated paperboard trays which will hold a complete meal are offered by *Cramer Products*. They can be used with paper, china, or plastic plates, cups, or dishes, and come in a variety of colors and patterns, including ginghams, plaids, polka dots, and stripes. "Carry-Grip" handles facilitate serving. A standard tray, 11⅜ by 10 in., holds an 8-in. plate and two cups. A second size, 15½ by 13 in. has nine holes for plates, cups, creamer, and salt and pepper. "Cut-outs" can be made to accommodate different sizes and styles of plates, cups, bottles, and so on.

A leaflet containing information on the origin of nonfat dry milk; effects of processing; how to use different types; home care; and nutritive values is available from the *American Dry Milk Institute*.

Let CREAM OF RICE help solve your modified diet problems

1
EXTRA NOURISHMENT

Cream of Rice is rich in iron plus Vitamins B_1, B_2, and Niacin.

It gives quick energy fast, too. Actually within a few minutes after eating. Cream of Rice is easy to digest. Many leading pediatricians advise it.

And many doctors recommend Cream of Rice in modified diets for food allergies, ulcers, high blood pressure, intestinal distress and old-age food difficulties.

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EASY TO FIX

Now Cream of Rice cooks in just 30 seconds. That's 10 times faster! What could be easier . . . quicker . . . less work! It's a meal in half a minute. A delicious, nourishing, easy-to-digest cereal young and old enjoy.

3
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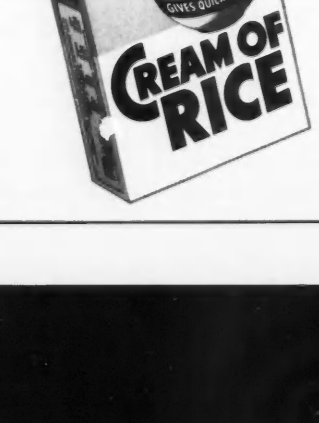
Cream of Rice has a delicate flavor. Different, delicious. This is a creamy rice treat that really tastes good.



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Single subscriptions to the "Green Grocery Monthly Supply Letter" will be supplied free to hospitals upon request by the *United Fresh Fruit and Vegetable Association*. This four-page letter gives monthly estimates of market supplies of fresh fruits and vegetables.

"Economizer II" is a new low-cost "range-with-ovens" manufactured by *Griswold Manufacturing Company*. Designed for food service installations, it is equipped with two full-size ovens, is heavily insulated, and has automatic heat controls which allow preheating to 400°F. in 9 min. Four 6-in. and four 8-in. heating units are staggered on a stainless steel top. The "Economizer II" bakes eight pies at one time for less than 5 cents power cost.

The California-Arizona lemon industry celebrates its 100th anniversary during 1956. To observe this anniversary, *Sunkist Growers* has put out an attractive kit which contains information about the lemon industry—the role it has played in California history; the lemon products processing industry; unusual facts and figures regarding lemons and their dietetic history; the role of lemon in public health; the lemon's beautifying effects in a paper entitled "A Squeeze of Lemon—for Beauty"; and recipes and flavoring suggestions in "A Squeeze of Lemon—for Flavor."

"Chrome Clean," a product of *Fletcher-Hillyer Corporation*, cleans and polishes kitchen ranges or any chrome surface. Action results when the liquid cleaner is applied to a small fine steel wool pad furnished with each bottle of cleaner. As the liquid comes in contact with the fine metal particles of the pad, a chemical reaction occurs, and the saturated pad dissolves the stain, erosion, dirt, or oxidation without rubbing or scrubbing. The surface is quickly wiped, and there is no powder or gummy substance to remove. The product is safely used to polish stainless steel, copper, nickel, and porcelain and will not harm painted surfaces. It should not be used on silver, iron, or aluminum.

Crescent Metal Products, Inc. is manufacturing a portable, propane-heated food carrier cabinet designed for caterers, inter-plant food service, central kitchen operations, hotels, and clubs. The Cres-Cor "Hot Stuff" cabinet allows foods to be transported and served hot with no preheating or reheating. It is a self-contained, drawer-type unit; drawers pull out to disclose a complete menu of hot sandwiches, soups, dinners, and so on. It is heated by a fixed burner with a controllable flame. The gas supply is carried as part of the unit, one bottle providing 12 to 18 hr. continuous service. Sized to fit and stack into a panel-type truck, the "Hot Stuff" cabinet is 20⅝ in. in width, 19 in. deep and 24 in. in height. Drawers are 4½ in. deep. The unit weighs 54 lb.

Durkee's "Snowflake Coconut" is a sweetened, extra-thin ribbon cut. Used as a cake topping, the softer flakes give a fluffy, delicate appearance, make a frosting easy to cut and tender to eat, and are economical to use. This cut is available in 10-lb. tins, 25- and 50-lb. cartons, and in 150-lb. fibre drums.

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INSIDE SCIENCE

The Vital Story of VITAMIN A

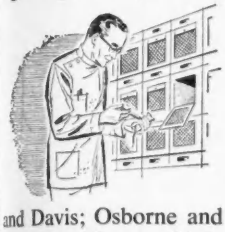
by Science Writer

We live in a golden age of the sciences!

In the science of nutrition discoveries of food elements and their action have resulted in the promise of better health for us all.

Let's consider vitamin A as an example.

A Capsule History. 1913 was the year. Two teams working independently with animal feeding experiments discovered that a diet which was good in all other respects but which varied only in the source of fat caused young animals to thrive or sicken as the fat was varied. The work of these teams (McCollum and Davis; Osborne and Mendel) led to the discovery of the food factor which we know as vitamin A.



Composition and Action. A pale yellow, oil-soluble substance, vitamin A is expressed in the chemist's shorthand as $C_{20}H_{29}OH$. It is necessary in the diets of men and animals to promote the body's growth and development. Vitamin A is a vital requirement in guarding the health of the eyes and skin, and for resistance against infection. It helps maintain the health of mucous membranes and other specialized epithelial and glandular tissues.

Vitamin A enters the body as a constituent of food. Or it may be created within the body when a precursor of vitamin A is eaten. A precursor is a food element with potential vitamin A *value* but no actual vitamin A *content*. For instance, many green leaves have a high vitamin A value but, paradoxically, contain no actual vitamin A. The body converts the precursor into the vitamin. The most common precursor of vitamin A is beta carotene, the natural yellow coloring of many foods, such as dairy products, cereal grains, carrots, alfalfa, etc.

When consumed in food vitamin A is absorbed primarily in the healthy intestine, is esterified in the intestine's walls and is carried as an ester in the lymph and blood to the body's storage depots. The liver, which has a large capacity for storage, contains about 90% of the vitamin A found in the body.

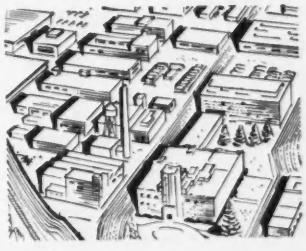
Isolation and Synthesis. It was not until 1937 that pure, crystalline vitamin A was isolated by Holmes and Corbett from fish-liver oil. Research in the synthesis of vitamin A was stimulated during the Second World War by the threat to natural sources in fish-liver oil. This work resulted in several processes to produce vitamin A synthetically. Of these, one of the most successful was evolved by the Roche research team headed by Dr. Otto Isler which was announced in 1947. Much of the vitamin A now used for pharmaceutical manufacturing and food fortification in the United States and many other countries of the world is produced by this process.

Vitamin A and beta carotene produced by the Hoffmann-La Roche synthesis have many positive advantages for food and pharmaceutical manufacturers. Among these are the complete absence of any "fishy" odor, taste, or after-taste; the reasonable and stable price; their stability, purity and uniformity and the assurance of a steady economical supply.

Vitamin A is described in the U. S. Pharmacopoeia as a fully acceptable compound for use in pharmaceutical products. The U. S. Food and Drug Administration has approved its use for the fortification of margarine and other foods.

Human Requirements. The Food & Nutrition Board of the National Research Council recommends that a daily allowance of 5000 International Units of vitamin A in the diet will maintain good nutrition of healthy adults in the U.S.A. The Board's recommendations vary above this for pregnant and lactating women, and below for infants and children. The adult dose used in therapy may vary from 50,000 to 200,000 units daily.

Production. At the huge Roche Park plant of Hoffmann-La Roche in Nutley, New Jersey, over 500 pieces of large-scale chemical engineering equipment are working constantly to produce the superior 'Roche' vitamin A. This production is so large that 'Roche' vitamin A comes from the plant actually by the tons. In fact, the entire needs of the food and pharmaceutical industries of the United States and Canada can be met from this one plant.



Again the Roche people, who have so often led the way in vitamin research and production, have made another contribution to the better health and well-being of countless millions.

This article is one of a series giving a brief resume of our present knowledge of those essential health factors—the vitamins. Reprints of this and other articles are available without charge. The Vital Story of Vitamin C was published previously and others are forthcoming. Send your request to: Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 286 St. Paul St., W.; Montreal, Quebec.

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to help you solve
many diet problems

Sustagen

therapeutic food for complete nourishment

A dilemma frequently confronting the dietitian arises from the fact that the nutritional needs of sick or injured patients are increased at a time when appetite and the ability to eat are often impaired. Further complicating the problem of diet in illness are physiologic disturbances which require the restriction of certain valuable nutrients—sodium, cholesterol, purines, etc.—common in many foods.

Type of Diet	Amount of Sustagen	Calories	Protein Gm.	Carbohydrate Gm.	Fat Gm.	Comment
Low purine diet	Sustagen, 530 Gm.	2050	124	350	19	no purine nitrogen; 42 mg. uric acid
Low cholesterol diet	Sustagen, 530 Gm.	2050	124	350	19	150 mg. cholesterol
High protein, low fat diet	Sustagen, 580 Gm.	2250	137	385	20	contains all amino acids in well balanced amounts
Liquid diet	Sustagen, 540 Gm.	2100	127	360	19	viscosity suitable for tube feeding
Bland diet (Peptic ulcer)	Sustagen, 570 Gm.	2200	134	377	20	buffering capacity of Sustagen is effective and prolonged
Liberalized low sodium diet*	Sustagen, 465 Gm.	1800	110	310	16	980 mg. sodium

*Note that the sodium content of Sustagen limits its use when dietary restriction of sodium must be severe.

Sustagen® is the only therapeutic food which contains all known dietary essentials, requiring only the addition of water. In addition to nutritional qualities Sustagen was designed to meet many physical and biochemical requirements of therapeutic nutrition. Thus Sustagen may be used, by mouth or by tube, as the only source of food or to fortify the therapeutic diet.

Sustagen is supplied in powder form in 1 pound, 2½ pound and 5 pound cans. One pound provides 1750 calories, including 105 Gm. protein.

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